The Builder.

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THE NEW SOCIETY of PAINTERS in WATER COLOURS, will OPEN their TWENTY-SIXTH ANNUAL EXHIBITION on MONDAY next, 23rd instant, at their GALLERY, 53, Pall-Mall, near St. James's Palace. Admission 1s. Catalogues, 6d. Season Tickets, 5s.

JAMES FAHEY, Secretary.

PRACTICAL GEOLOGY.—King's College, London.—Professor TENNANT, F.G.S. will give a COURSE of TWELVE LECTURES on GEOLOGY, having especial reference to the application of the science to Engineering, Mining, Architecture, and Agriculture.

The Lectures will commence on FRIDAY morning, APRIL 20th, at NINE o'clock. They will be continued on each succeeding WEDNESDAY and FRIDAY, at the same hour.—Fee, 1*l.* 11s. 6d.

R. W. JELF, D.D. Principal.

ARCHITECTURAL EXHIBITION, 9, CONDUIT STREET, REGENT STREET,—Patron H.R.H. the PRINCE CONSORT. — NOW OPEN, from NINE till SIX. Admission, One Shilling, or by Half-crown Season Tickets, at all times, and to all the TUESDAY EVENING LECTURES. First Lecture on Tuesday Evening, April 24th, on "The Arrangement of a Roman Consular House, and the every-day Life of a Roman Patrician," by Professor DONALDSON, Ph. D.

JAS. FERGUSSON, F.R.A.S. } Hon. Secs.
JAS. EDMESTON, F.R.I.B.A. }

ARCHITECTURAL EXHIBITION. — In the present Exhibition (No. 326) are specimens of PHOTOGRAPHIC ETCHING, illustrating a simple method of obtaining, without a camera, fac-simile copies of plans, drawings, or any artistic design, entirely free from spherical aberration, and therefore true to scale. W. STRUDWICK will forward his Book of Instructions for eighteen stamps.—2, Bolton-terrace, Newington, S.

PARISH of BATTERSEA BURIAL BOARD.—The Board, in answer to an advertisement inserted in the *Times* and other papers, by order of the overseers of this parish, hereby inform the said overseers, the parishioners, and the public, that it has been in the receipt for some time past of the money they required to purchase the land for a burial-ground for this parish, and erect chapels, such loan having been sanctioned by warrant of one of her Majesty's Principal Secretaries of State; and that the parish rates are mortgaged as a security for the said loan, by the authority of the Commissioners of the Lords of her Majesty's Treasury.—By order of the Board,

GEO. CHADWIN, Clerk to the Board.

MR. SAMUEL CLARE respectfully invites the Nobility, Gentry, and Architects to honour him with a visit, to inspect the magnificent RENAISSANCE SCREEN from the Church of St. Luke, Cremona, carved by Antonio Maria Viani, called Vianino, School of Campi, Cremona, 1582.—Clare's Gallery of Ancient Furniture, Curiosities, Armour, &c. &c. 11A, Great Marlborough-street, London, W.

HENRY PRATT, Manager.

THE METROPOLITAN BUILDING ACT, 1855, sec. 33.—The Institute of British Architects hereby give Notice that an EXAMINATION of PERSONS desirous of obtaining a CERTIFICATE of COMPETENCY to perform the duties of DISTRICT SURVEYOR, will take place at the Rooms of the Institute, No. 9, Conduit-street, Hanover-square, on TUESDAY, the 1st day of MAY, at ELEVEN o'clock in the forenoon. Persons desirous to be examined must, on or before FRIDAY, the 27th day of APRIL, send an application, which must be accompanied by a statement, according to a form to be previously obtained at the Rooms of the Institute.

C. C. NELSON, } Hon. Secs.
T. HAYTER LEWIS, }

April 17th, 1860.

COMPETITIONS.

TO ARCHITECTS. — The Municipal Trustees of the Charities of the Borough of Faversham, in the county of Kent, are prepared to receive DESIGNS for THIRTY ALMSHOUSES, containing accommodation for Thirty Poor Persons, with a CHAPEL adjoining thereto, to be erected on land belonging to Napleton's Charity, in the town of Faversham, containing 2 acres and 19 poles.—For further particulars apply immediately to Mr. FRANCIS F. GIRAUD, Solicitor, South House, Faversham.

TO ARCHITECTS.—INFIRMARY for the NORTH RIDING of YORKSHIRE.—The Committee for erecting the proposed Infirmary for the North Riding of Yorkshire, invite Architects to send in by the 1st of JUNE next, competing DESIGNS for the BUILDING, in accordance with particulars which can be obtained by application to the latter of the undersigned. A premium of 50*l.* will be given for the best design, and 25*l.* for the second best. Should the successful competitor be engaged as superintending architect, the premium to be merged in the commission.

EDGAR GILKES, } Hon. Secs.
JOHN S. PEACOCK, }

Middlesbrough, April 4th, 1860.

BOROUGH of BIRMINGHAM.—To ARCHITECTS and OTHERS.—The Burial Board Committee of the Council of the Borough of Birmingham, are desirous of receiving Designs, Plans, Sections, Descriptive Specifications, and Estimates for FENCING-IN a portion of the LAND purchased for a Cemetery, at Witton, and for ERECTING TWO CHAPELS, with Reception and Waiting Rooms to each, a SUPERINTENDENT'S RESIDENCE, with Board Room, &c. PORTER'S LODGE, ENTRANCE GATES, and Approaches, accompanied by such details and suggestions as the competitors may think necessary for the information and guidance of the Committee in their selection. A Premium of 50*l.* will be given for the Design considered first in point of merit, unless the Architect should be employed to carry out the Works, in which case it will merge in and form part of his commission; and one of 30*l.* and another of 20*l.* for the second and third best. The Designs obtaining Premiums to become the property of the Committee, who are not to be bound necessarily to employ any of the competitors to carry out the Works. Lithographed plans of the site, drawn to a scale of one chain to an inch, with contour lines marked thereon at every ten feet of altitude, the sites of Chapels, Superintendent's Residence, &c. Porter's Lodge, Entrance Gates, and Approaches, and further particulars as to the competition, may be obtained on application to the Borough Surveyor, Public Office, Moor-street. The Plans, Estimates, and particulars, with the name and address of the Competitors marked thereon, to be enclosed in a sealed cover, endorsed, "Designs for Chapels, &c. at New Cemetery," addressed to the undersigned, at his Offices, in Temple-street, Birmingham, and must be sent to him, free of expense, on or before the 1st day of June, 1860.

THOMAS STANDBRIDGE, Town Clerk.

Birmingham, April 12th, 1860

BOROUGH of BIRMINGHAM.—To LANDSCAPE GARDENERS and OTHERS.—The Burial Board Committee of the Council of the Borough of Birmingham are desirous of receiving DESIGNS and ESTIMATES for LAYING-OUT and PLANTING the LAND purchased at Witton, distant about 2½ miles from Birmingham, for the purposes of a Cemetery. The designs must embrace the following particulars:—

First.—A Ground Plan of the Site, showing the proposed roads and walks, the ornamental planting, the portions to be used for the purpose of Interment, and all other requirements for the proper working of the Cemetery.

Second.—Sections showing the earthwork required for the arrangement of the surface.

Third.—Such other details and suggestions as the Competitors may think necessary for the information and guidance of the Committee in their selection.

The site includes an area of about 105 acres, but it is only intended to appropriate about 60 acres in the first instance. A Premium of 30*l.* will be given for the design considered first in point of merit, and one of 20*l.* and another of 10*l.* for the second and third. The designs obtaining premiums to become the property of the Committee, who are not to be bound necessarily to employ any of the Competitors to carry out the works. Competitors to state the terms upon which they will carry out the works. Lithographed plans of the site, drawn to a scale of one chain to an inch, with contour lines marked thereon at every ten feet of altitude, the sites of Chapels, Superintendent's residence, lodge, entrances, and further particulars as to the competition, may be obtained on application to the Borough Surveyor, Public Office, Moor-street. The plans, estimates, and particulars, with the name and address of the Competitor marked thereon, to be enclosed in a sealed cover, endorsed "Plan for Laying-out the Borough Cemetery," addressed to the undersigned, at his Offices, in Temple street, Birmingham; and they must be there delivered, free of expense, on or before the 1st day of JUNE, 1860.

THOMAS STANDBRIDGE, Town Clerk.

Birmingham, April 12th, 1860.

CONTRACTS.

NOTICE to BUILDERS, IRON-FOUNDERS, and OTHERS.—The Council of the Borough of Stockport purpose covering over their present open MARKET PLACE in the said Borough. Particulars as to extent of site, &c. may be obtained from Mr. SAMUEL HUNT, Surveyor, Heaton-lane, Stockport. Persons desirous of CONTRACTING for the WORK are requested to forward plans, specification, and estimate, on or before the 1st day of MAY next, addressed to "The Chairman of the Manorial Tolls Committee, Court House, Stockport."

Court House, Stockport, 9th April, 1860.

TITCHFIELD BURIAL BOARD.—To IRONMONGERS and OTHERS.—The above Board are desirous to receive TENDERS per running yard for the ERECTION and FIXING of 600 yards, or thereabouts, of IRON RAILING and STONE COPING. The Tenders to be for both cast and wrought iron rails, and for Portland and Purbeck stone. All particulars and specifications to be had of the Clerk to the Burial Board, at his Office, Titchfield, Hants.

HENRY COLLINS, Clerk to the Board.

April 12th, 1860.

CONTRACTS.

COAST GUARD CONTRACT.

NOTICE to BUILDERS and CONTRACTORS.

Persons desirous of TENDERING for the ERECTION of a COAST GUARD STATION at Sunk Island, Stone Creek, in the East Riding of the County of York, may inspect the drawings and specifications at the Coast Guard Watch-room, Patrington, or at this Office, between the hours of TEN and FOUR, from MONDAY, the 16th instant, to THURSDAY, the 3rd of MAY now next ensuing, and both inclusive (Sundays excepted). The forms upon which Tenders must be made may be obtained on application to the Coast Guard Watch-room, or at this Office. Tenders to be sent to this Office not later than TWELVE o'clock at noon of the 4th of MAY, under seal, directed to the Commodore Comptroller General of Coast Guard, and endorsed "Tender for Coast Guard Buildings, Sunk Island."—The Lords Commissioners of the Admiralty do not pledge themselves to accept the lowest or either of the Tenders.

Dated this 10th day of April, 1860, at the Admiralty Coast Guard Office, 12, Spring-gardens, London, S.W.

COAST GUARD CONTRACT.

NOTICE to BUILDERS and CONTRACTORS.

Persons desirous of TENDERING for the ERECTION of a COAST GUARD STATION at Bournemouth, in the County of Hampshire, may inspect the drawings and specifications at the Coast Guard Watch-room, Bournemouth, or at this Office, between the hours of TEN and FOUR, from WEDNESDAY, the 18th instant, to FRIDAY, the 4th of MAY, now next ensuing, and both inclusive (Sundays excepted). Tenders to be sent to this Office not later than TWELVE o'clock at noon of the 5th of MAY, under seal, directed to the Commodore Comptroller-General of Coast Guard, and endorsed "Tender for Bournemouth Station."—The Lords Commissioners of the Admiralty do not pledge themselves to accept the lowest or either of the Tenders.

Dated this 10th day of April, 1860, at the Admiralty, Coast Guard Office, 12, Spring-gardens, London, S.W.

MERSEY DOCK ESTATE, BIRKENHEAD.—WOODSIDE LANDING-STAGE.—To CONTRACTORS, SHIP-BUILDERS, BOILER-MAKERS, &c.—The Mersey Docks and Harbour Board are prepared to receive TENDERS from parties willing to undertake to CONSTRUCT, FIX in PLACE, and COMPLETE, ready for public use, a new FLOATING LANDING-STAGE, to be moored in the river Mersey, in front of, and parallel to, the new Dock Wall at Woodside Basin. The contract will comprise fifty floating pontoons, of the very best boiler work, in length varying from 80 to 101 feet, and weighing 980 tons, or thereabouts; five wrought-iron kelsons, or hollow rectangular beams, each 800 feet long, from 3 to 5 feet in depth, and 2 feet in width, the gross weight of which will be 990 tons, or thereabouts; five other hollow beams, of wrought-iron, forming the girders of two bridges connecting the stage with the shore, and weighing about 234 tons; 105 tons, more or less, of cast-iron; and about 141 tons of smiths' work, in straps, bolts, spikes, mooring chains, &c.; together with about 80,000 cubic feet of timber, in deck beams, decks, &c. wrought, fixed in place, and painted. A specification of the works and conditions of contract, with duplicate schedules of quantities for the parties to Tender upon, together with an atlas of detailed drawings, will be supplied, upon the payment of seven guineas, to any party making application for the same, at the Office of the Dock Secretary, Revenue-buildings, Liverpool, between the hours of TEN and FOUR, on and after MONDAY, the 7th day of MAY next; and any further information that may be required can be obtained on application to Mr. JOHN B. HARTLEY, Engineer to the Mersey Dock Board, at his Office, Dockyard, Coburg Dock.

Sealed Tenders for the above works, on the duplicate schedule of quantities which accompanies each specification, are to be delivered at the Secretary's Office, in sealed covers, addressed to the "Chairman of the Committee of Dock Works," and marked on the outside, "Tender for Landing-stage," on or before SATURDAY, the 26th day of MAY next, at TEN o'clock a.m. after which hour on that day no Tender will be received. Parties or their agents to be in attendance on that day at ELEVEN o'clock. Each Tender must contain a sealed letter with the names of two responsible parties who are willing to become bound, jointly and severally with the party tendering for the contract, in the sum of 20,000*l.* for the due performance thereof. The Board will not be bound to accept the lowest or any of the Tenders.—By order,

DANIEL MASON, Secretary.

Dock-office, Liverpool, April 7th, 1860.

PARISH of EALING, Middlesex.—The Burial Board of this Parish hereby invite TENDERS from competent persons to fill the joint offices of ARCHITECT and SURVEYOR to the Board. Candidates to submit plans for two chapels, entrance lodge, and gateway, to be erected upon the proposed burial-ground, at a cost not exceeding 1,400*l.*; and also to state the terms per day for the necessary duties as surveyor.—Such Tenders and plans to be forwarded to Mr. W. H. SANDERS, Old Brentford, Middlesex, W. on or before the 1st of MAY next, where a plan of the ground may be seen, and any further information obtained.—By order,

Old Brentford, W. April 4, 1860. W. H. SANDERS, Clerk.

BERMONDSEY, SURREY.—To DUST CONTRACTORS, BRICKMAKERS, FARMERS, and OTHERS. The Vestry of the Parish of Bermondsey, Surrey, will meet at the Workhouse, in Russell-street, on MONDAY, the 7th day of MAY next, at SIX o'clock in the evening precisely, to receive TENDERS from persons willing to PURCHASE all the DUST, ASHES, CLINKERS, RUBBISH, HOUSE, GARDEN, and other REFUSE, which may be collected from the manufactories and houses in the said parish, from the 8th day of MAY next to the 24th day of JUNE, 1861. The dust and refuse will be collected by the Vestry, and delivered in the state it is collected to the purchaser, at any place of deposit to be named by him, within three-quarters of a mile of the boundary of any part of the parish. The dust and refuse will be required to be paid for monthly within seven days after the delivery of each monthly account. A deposit equal to the value of 500 loads will be required to be made by the person whose Tender may be accepted, such deposit to remain in the hands of the Vestry during the term of the Contract, as a security for the due performance thereof; and on the due performance of the Contract to be retained by the Vestry in part payment of the last monthly instalment. The certificate of the Surveyor as to the number of loads delivered shall be binding on the contractor. The Vestry do not bind themselves to accept the highest or any Tender.—Forms of Tenders may be obtained at the Vestry Office, in Maltby-street.

April, 1860. C. H. DREW, Clerk to the Vestry.

[*For remainder of Contracts see next page.*

CONTRACTS.

TO BUILDERS. — Persons desirous of CONTRACTING for the ERECTION of a small PARSONAGE HOUSE and OFFICES, in the parish of Thurlby, between Lincoln and Newark, may apply by letter, giving references, to Mr. CHRISTIAN, 10, Whitehall-place, London, S.W. not later than the 25th instant.

TO CONTRACTORS and OTHERS.—TO BE DISPOSED OF, by PRIVATE CONTRACT, a 25-HORSE POWER STEAM DREDGER (lying in the Victoria Docks), in excellent working order, 80 feet long and 21 feet 6 inches wide, capable of raising from 800 to 1,000 cubic yards per day, in from 7 to 20 feet of water, with stores on board; a valuable 25-HORSE POWER STEAM-TUG, "Wonder" (lying in the Victoria Docks), in good working condition; TEN SMALL BARGES (lying off Tilbury, Essex), in good condition, 36 feet long and 12 feet wide, and capable of carrying about 25 tons in 3 feet of water. Also the following lying at LYNN:—SIX CAPTEAL HOPPER BARGES, 47 feet long and 16 feet wide, carrying about 45 tons each, in 4 feet 9 inches water, having two cabins with stove and funnel, and a good chain cable; NINE SMALL BARGES, of the same dimensions, &c. as the ones above named.—For particulars, &c. apply to Mr. THOMAS WHITE, Contractor's Office, Bromley by Bow, Middlesex, E.

TO GASHOLDER MAKERS.—The Directors of the Arundel Gas Light and Coke Company are desirous of receiving TENDERS for the SUPPLY and ERECTION, on their works at Tortington, near Arundel, of a GASHOLDER, 33 feet in diameter and 12 feet deep. Plans and specifications may be seen at the Offices of the Secretary to the Company, at Arundel, and at the Offices of Mr. CHARLES DIXON, Engineer, Chichester, between the hours of NINE and FIVE. Tenders to be sent in, addressed to Mr. RICHARD HOLMES, the Secretary of the Gas Company, Arundel, before TEN o'clock, a.m. of FRIDAY, the 18th MAY next, marked "Tender for Gasholder." The Directors do not pledge themselves to accept the lowest tender.
Arundel, 14th April, 1860.

TO BUILDERS and OTHERS.—TENDERS are required for BUILDING ADDITIONS and making certain ALTERATIONS to the MANOR HOUSE, Chislehurst, Kent, for G. H. Baskcombe, esq. The drawings and specifications for such works may be seen upon the above Premises, on and after TUESDAY, the 24th instant, between the hours of TWELVE and SIX. and forms of Tender, with quantities, and further particulars, may be had upon application to the Architect, who purposes to attend at the Premises, on TUESDAY and WEDNESDAY next. The Tenders are to be delivered, free of expense, at the Office of the Architect, in Dacre Park, Lee, at or before ONE o'clock in the afternoon of MONDAY, APRIL 30th instant. The lowest or any Tender will not be necessarily accepted. FRANCIS F. THORNE, Architect,
7, Eaton-terrace, Dacre Park, Lee.

TO PLUMBERS and PAINTERS.—TENDERS are invited for WORKS to be done in the COMPLETION of FIVE or more TWENTY-ROOMED HOUSES, as also for Jobbing Works on other property.—For particulars, apply to Mr. H. M. RAMSAY, Surveyor. Office, Westbourne-square, Paddington.

TO PLASTERERS.—TENDERS are invited (labour only) for the CARRYING OUT and COMPLETION of the INSIDE WORK to THREE or more second-rate HOUSES, and sundry works on other property.—For particulars, apply to Mr. H. M. RAMSAY. Office, Westbourne-square, Paddington.

TO PAVIOURS. — The Guardians of the Whitechapel Union will meet at their Board-room, at the Union Workhouse, Charles-street, Mile-end New Town, N.E. on TUESDAY, the 1st day of MAY next, at SIX o'clock in the evening, to receive TENDERS and CONTRACT for PAVING certain of the YARDS at such WORKHOUSE, with 3-inch York paving, the extent of which paving is about 11,717 feet superficial. The specification for, and site of, such works may be inspected, on application at the Workhouse as above, and forms of Tender and other particulars obtained, on application to the Clerk; or to THOMAS D. BARRY, Esq. 39, Victoria-street, Norwich. All Tenders must be sealed up and endorsed, "Tender for Paving," but the Guardians do not bind themselves to accept the lowest or any Tender.—By order,
G. ADAMS FARR, Clerk.
Clerk's Office, Workhouse, Mile-end New Town, N.E.
April 12, 1860.

LEEDS CORPORATION WATER-WORKS.—EXTENSION of TIME for RECEIVING TENDERS for FILTER-BEDS.—The PERIOD for receiving TENDERS for the CONSTRUCTION of FILTER-BEDS is EXTENDED from THURSDAY, the 12th inst. until THURSDAY, the 3rd of MAY next. The plans and specification may be seen at the Office of Mr. EDWARD FILLITER, C.E. Borough Surveyor, Townhall, Leeds, where forms of Tender may also be obtained.—By order,
Leeds, April 13, 1860. JOHN A. IKIN Town Clerk.

TO SEWER CONTRACTORS and OTHERS.—The Directors of the Birkenhead Freehold Land Society are prepared to receive TENDERS for CONSTRUCTING about 1,800 yards of SEWERS, and making of ROADS in the Tranmere-park estate. Persons desirous of Tendering can see the plans and specifications at the Office of the Surveyor, Mr. JOSEPH BRATTAN, Hamilton-street, Birkenhead. The Directors living on the estate will show the ground and give other information.—Sealed Tenders for the above work to be addressed to W. A. WILLIAMS, Secretary, and left at his Residence, 29, Conway-street, Birkenhead, on or before TUESDAY, the 1st day of MAY, and marked "Tender for Sewers, &c." The Directors do not bind themselves to accept the lowest or any Tender.

TO BUILDERS.—Persons desirous of CONTRACTING for the ERECTION of SEVEN HOUSES and OFFICES at Kettering, in the county of Northampton, may see the plans and specifications, and obtain a bill of the quantities at the Office of Mr. E. F. LAW, Architect. The Tenders to be delivered to the Rev. THOS. H. MADGE the Rectory, Kettering, on or before SATURDAY, the 5th MAY next.—N.B. The lowest or any Tender will not necessarily be accepted. E. F. LAW, Architect.
Northampton, April 18, 1860.

TO BUILDERS.—Persons desirous of CONTRACTING for the ERECTION of EXTENSIVE PREMISES in the Drapery, Northampton, may see the plans and specifications, and obtain a bill of the quantities at the Office of Mr. E. F. LAW, Artichect. The Tenders to be delivered to the Architect on or before SATURDAY, the 5th of MAY next.—N.B. The lowest Tender will not necessarily be accepted. E. F. LAW, Architect.
Northampton, April 18th, 1860.

TO BOILER MAKERS.—STRAND UNION WORKHOUSE.—The Guardians of the Poor of the Strand Union invite TENDERS for the SUPPLY and FIXING of a TWO-HORSE POWER BOILER, with valves, taps, &c. complete, to be attached to the existing cooking apparatus at their Workhouse. It must be erected within a space of 5 feet 8 inches by 3 feet 9 inches. Pressure required, not exceeding 12 lbs. per inch. It must possess facilities for being frequently cleaned. Parties tendering are requested to state the following particulars:—Proposed thickness and quality of plate—whether the boiler will be perpendicular or horizontal—what the maximum pressure it is calculated to bear—quantity of fuel it will require to keep up a sufficient supply of steam for twelve hours—time it will occupy in getting up the steam after lighting the fire. Also, the additional cost of a similar Three-horse Power Boiler, if that should be preferred. It will also be necessary to state how long it will take after the order is given to supply and fix complete, and whether it is intended to be fixed in brickwork, or how otherwise.—Further particulars may be obtained on application to the Master of the Workhouse, Cleveland-street, Fitzroy-square. Sealed Tenders, superscribed "Tender for Boiler," addressed to the Guardians of the Poor of the Strand Union, to be forwarded to No. 6, Bow-street, London, W.C. on or before MONDAY, 30th APRIL instant. They will be opened at a meeting of Guardians on TUESDAY, the 1st MAY next, at SEVEN o'clock p.m. when persons tendering, or their agents, are requested to attend. The Guardians do not bind themselves to accept the lowest or any Tender.—By order,
19th April, 1860. JAMES KILNER, Clerk.

MARLOW BRIDGE, in the Counties of Bucks and Berks.—To BUILDERS, IRONFOUNDERS, and OTHERS.—Notice is hereby given that any person desirous of CONTRACTING for the REPAIRS required to be done to the IRON SUSPENSION BRIDGE crossing the Thames at Great Marlow, in the counties of Bucks and Berks, is requested to deliver a TENDER, in writing, for the same, sealed up and addressed to me, at my Office, in Aylesbury, on or before MONDAY, the 23rd day of APRIL next. Each Tender must be divided into parts, namely, one price for providing, fixing, &c. of the wrought-iron lattice girders and all ironwork, and the other a price for supplying the new woodwork and removing the old roadway, and renewing the same, as well as the handrails, including fixing, painting, &c. Plans and specifications of the works may be seen at my Office, and also at the Office of Messrs. EASTON, AMOS, & SONS, of the Grove, Southwark, from whom all information may be obtained. Each party contracting will be required to enter into a contract and bond, with two sufficient sureties, for the due performance of his contract, and to set forth in his Tender the names and description of such sureties.
ACTON TINDAL, Clerk of the Peace for Bucks.
County Hall, Aylesbury, 30th March, 1860.

THE BURIAL BOARD for the PARISH of BATTERSEA, in the County of Surrey, hereby give Notice that they intend, after the expiration of FOURTEEN days from the date hereof, to enter into a CONTRACT or CONTRACTS for the ERECTION of TWO CHAPELS, a LODGE, TOOL HOUSE, and the INCLOSURE of their proposed BURIAL-GROUND, situate adjoining Battersea Common; as likewise for draining the said land. All persons desirous of Tendering for the proposed works may send in their TENDERS to Mr. CHARLES LEE, of No. 20, Golden-square, Architect, on or before the 7th day of MAY next, from whom Particulars may be obtained. The Board do not bind themselves to accept the lowest or any Tender. The Board will proceed to open the Tenders on the 9th day of MAY next, at HALF-PAST TEN o'clock in the morning precisely, at the Vestry-room of the parish church of Saint Mary, Battersea, and when persons tendering are required to be in attendance, and to be prepared with the names of two sureties, to enter into a bond for the due performance of the works within the time specified. Form of bond and contract may be seen at Mr. Lee's. Dated this 21st day of April, 1860.—By order of the Board,
GEORGE CHADWIN, Clerk.

TO BUILDERS.—TENDERS are required for TAKING DOWN and REBUILDING the STABLING, &c. at No. 7½, Great Chapel-street, Westminster. The drawings, specification, and particulars may be seen on the premises from TUESDAY, the 24th, to FRIDAY, the 27th instant, both inclusive.
April 19th, 1860.

TO BUILDERS.—Persons desirous of TENDERING for RE-BUILDING the RESIDENCE, OFFICES, and FARM-BUILDINGS at Moulton-park, within three miles of the town of Northampton, may inspect the plans and specifications at the Office of the Clerk of Works, on the Premises, on and after THURSDAY next, the 26th instant. Tenders, sealed and endorsed, "Tender for Works at Moulton-park," to be delivered to Messrs. BAXTER ROSE, NORTON, & SPOFORTH, 6, Victoria-street, Westminster Abbey, on or before MONDAY, the 7th day of MAY next, at whose Offices, and of the Architect, Mr. FREDERICK EGGAR, Alton, Hants, further particulars, conditions, and forms of contract, may be obtained. The right of rejecting the whole or any of the Tenders is reserved.

TO SEWERAGE CONTRACTORS.—TENDERS are wanted by the Commissioners of Police for CONSTRUCTING certain SEWERS, within the Burgh of Dundee; plans, &c. of which may be seen at the Office of the Town Surveyor, Police-buildings.—All Tenders must be made on printed forms, which will be supplied to contractors. They are to be addressed to the Commissioners of Police, Surveyor's Office, Police-buildings, Dundee, marked "Tender for Sewers," and must be delivered there not later than MONDAY, the 7th MAY next. Parties tendering must be prepared to find sufficient security for the due fulfilment of their contract. The Commissioners do not bind themselves to accept the lowest or any Tender. The cost of the above work, when completed, is estimated at 4,000*l*. JOHN FULTON, Town Surveyor.
Dundee, April 7, 1860.

NEW CONGREGATIONAL CHURCH and SCHOOLS, Chorlton-road, Manchester.—Builders willing to CONTRACT for the above BUILDINGS, may see the conditions, plans, and specifications, by application at the Vestry, Iron Church, Sloane-street, near Brook's-bar, Manchester, on and after TUESDAY, the 17th day of APRIL next, between the hours of TEN a.m. and FOUR p.m. Tenders (sealed and addressed to the Building Committee) to be delivered to the Honorary Secretary, HENRY DUNNILL, Esq 5, Bond-street, Manchester, not later than THURSDAY, the 26th day of APRIL next, at TWO o'clock, p.m. The lowest or any of the Tenders will not necessarily be accepted. Information can also be obtained by application to the Architects, who have prepared bills of quantities. POULTON & WOODMAN, Architects, Reading.
March 24th, 1860.

DORSET COUNTY LUNATIC ASYLUM. To BUILDERS.—Persons willing to CONTRACT for sundry WORKS proposed to be done in ERECTING a PAUPER LUNATIC ASYLUM for the County of Dorset, on a plot of ground selected for the purpose, and situate about a mile on the Dorchester side of the present Asylum at Forston, and about three miles from Dorchester, on the line of road from Dorchester to Cerne or Sherborne, are required to send in TENDERS, sealed up and endorsed "Tender for County Lunatic Asylum," to the Chairman of the Visitors, under cover to the Clerk, Mr. JOHN BROWN, Dorchester, on or before WEDNESDAY, the 9th day of MAY next, after which time no Tender will be received. The works to be done under the direction of the Committee of Visitors and their architect, agreeably to plans, specifications, and conditions, which may be inspected at the Office of the Architect, Mr. H. E. KENDALL, jun. 33, Brunswick square, London, and also at Forston House, near Dorchester, on any day after the 18th day of APRIL instant, between the hours of TEN, a.m. and SIX. p.m. The Committee will not be pledged to accept the lowest or any Tender, and the Contractor will be required to enter into a contract, and to give a bond, with sufficient security, to be approved by the Committee, in the sum of 4,000*l*. for the due performance of the contract. The quantities can be obtained from Mr. THOMAS PERCY, of No. 1, Alfred-place, Bedford-square, London, Surveyor, and the usual charges of such Surveyor are to be paid by the Contractor whose Tender may be accepted.—By order of the Committee of Visitors,
(Signed) JOHN BROWN, Clerk.
Dorchester, 3rd April, 1860.

MANCHESTER ASSIZE COURTS. Persons desirous of TENDERING for the ERECTION of the whole of the above BUILDINGS (with the exceptions of the foundations already executed) can inspect the plans and specifications, and obtain printed bills of quantities, at the Office of Mr. THOMAS TAYLOR, Surveyor, No. 102, Cross-street, Manchester, on and after the 1st of MAY next. Tenders, under seal, to be sent to Mr. F. C. HUTTON, Clerk to the Manchester Assize Courts Committee, 37, New Bailey-street, Salford, on or before the 14th of MAY next. The Magistrates reserve to themselves the right of rejecting the whole or any of the Tenders, and do not pledge themselves to accept the lowest.
ALFRED WATERHOUSE, Architect.
Cross-street-chambers, Manchester, April 3, 1860.

TENDERS.—Notice is hereby given, that the Hastings Local Board of Health are ready to receive TENDERS from persons desirous of CONTRACTING with them for the supply of CAST-IRON PIPES for WATER-MAINS for Twelve Months.—The specification may be seen, and further particulars had, on application at the Town Clerk's Office, High street, Hastings, where Tenders duly signed must be delivered before TEN o'clock of the morning of FRIDAY, the 27th day of APRIL instant.—The Local Board do not bind themselves to accept the lowest or any Tender.
ROBERT GROWSE, Town Clerk.
Hastings, 16th April, 1860.

TO CONTRACTORS and BUILDERS.—TENDERS will shortly be required for the ERECTION of a NEW DIOCESAN TRAINING SCHOOL for Schoolmasters, with RESIDENCES for the Principal and Vice-Principal, at Winchester. Hants. Builders desirous of Tendering are requested to send their names to the Architect, Mr. JOHN COLSON, St. Swithin-street, Winchester. The quantities will be supplied.
April 21st, 1860.

CONTRACT for GAS-METERS.—Manufacturers are invited to TENDER for the SUPPLY of 400 WET METERS, of various sizes, for the Collingwood and FitzRoy Gas-works, Victoria. Specifications and form of Tender to be obtained at the Offices of the Company's Agents, Messrs. SMITH, WHITE, & CO. No. 16, Bishopsgate-street Within, London; or to Mr. BENJAMIN BURLEIGH, Civil Engineer, Coldbarbour-lane, Camberwell. Tenders to be delivered to the former address, sealed, and endorsed, "Tenders for Gas-Meters," not later than FOUR o'clock on the 25th day of APRIL, 1860. Messrs. Smith, White, & Co. do not pledge themselves to accept the lowest or any of the Tenders.

TO ENGINEERS and BOILER MAKERS. The Commissioners for Public Baths and Wash-houses in the Parish of St. Marylebone, will meet in the Board-room of this institution, on TUESDAY, MAY 1st, to receive TENDERS for a NEW BOILER, and the PURCHASE and REMOVAL of the OLD ONE. Drawings and specification may be seen by application to Mr. FOOT, on the Premises.—The Commissioners do not bind themselves to accept the lowest or any Tender.

NEW CONGREGATIONAL CHURCH, STALYBRIDGE.—Builders willing to CONTRACT for the above building may see the conditions, plans, and specifications at the Schools, in Melbourne-street, Stalybridge, on and after THURSDAY, the 26th day of APRIL next, between the hours of TEN a.m. and FIVE p.m. Tenders (sealed, and addressed to the Building Committee) to be delivered to Mr. CHURCHILL, Stalybridge, not later than TUESDAY, the 8th day of MAY next, at FOUR p.m. The lowest or any of the Tenders will not necessarily be accepted. Information can also be obtained by application to the Architects, who have prepared bills of quantities.
April 9, 1860. POULTON & WOODMAN, Architects, Reading.

TO BUILDERS.—Persons desirous of offering TENDERS for the ERECTION of a NATIONAL SCHOOL and RESIDENCE at Cumnor, near Abingdon, Berks, can see the plans, specification, and form of Tender, upon application to the Hon. and Rev. C. F. O. SPENCER, Cumnor. The estimates are to be sent in, under cover, to Mr. SPENCER, at or before TWELVE o'clock, at noon of TUESDAY, MAY 1st. The Committee do not bind themselves to accept the lowest or any Tender.
JOHN HENRY HAKEWILL, Architect.
50, Maddox-street, London, W.

TO SCAVENGERS, CONTRACTORS, and OTHERS.—The Commissioners of Sewers of the City of London will meet in the GUILDHALL of the said City, on TUESDAY, the 8th of MAY next, at ONE o'clock precisely, to receive TENDERS for CLEANSING the STREETS, and for REMOVING DUST, ASHES, and REFUSE, &c. from the houses of the inhabitants; and for WATERING certain streets within the said City; for the term of ONE YEAR from Midsummer Day next, agreeably to specifications, copies of which may be had at this Office. The City is divided, for the purposes of these contracts, into six divisions. Each Contractor will be required to enter into bond, with two approved sureties, in the sum of 500*l*. for each division for Cleansing, and 100*l*. for each division for Watering, for the due performance of the several Contracts; and the consent, in writing, of the sureties so proposed to act as such must be sent in with the Tenders. The Commissioners do not undertake to accept the lowest Tender in any case or any one unless deemed satisfactory. No Tender will be received after ONE o'clock on the day of treaty, nor will any Tender be received unless it contains, inclosed, the sum of 20*l*. in Bank of England notes, for each division tendered for, in evidence that the same is made *bonâ fide*, which sums of money will be returned to each person whose Tender is not accepted; but such sums will be retained in the other cases until the Contracts and Bonds shall have been duly executed by the parties tendering and their sureties: and in case of their not being so duly executed, the said sums of money will be forfeited and applied to the purposes of the Commissioners. JOSEPH DAW, Principal Clerk.
Sewers Office, Guildhall, 18th April, 1860.

RAILWAYS in SPAIN.—The Council of Administration of the Tudela and Bilbáo Railway do hereby give notice, that they will be prepared, as hereinafter stated, to receive PROPOSALS for the EXECUTION of the SECTION of their RAILWAY, extending from the town of Miranda de Ebro (where the section already under contract terminates) to the junction of their line with the railway from Zaragoza to Pamplona at a short distance below the town of Alfaro, being a length of upwards of 43 kilometres, or 89 English miles. On and after Tuesday, the 1st May next, plans, sections, and specifications of the railway and works, and a draft of the proposed conditions and contract, will be ready for the inspection of parties disposed to Tender for the same, at the Office of the Company, No. 20, Calle de Bidebarrieta, in Bilbáo, and at those of their Engineer-in-Chief, CHARLES VIGNOLES, Esq. No. 21, Duke-street, Westminster, London, S.W. at which places all necessary explanations will be afforded to parties who apply, and where general information may be obtained in the meantime. The works are divided into several trozos (or sub-sections), and sealed proposals for the whole section, or for each of the trozos separately [presented in strict accordance with the conditions, which parties interested will have ample opportunity of previously examining, and filled in upon the printed form of Tender, which will be supplied], will be received up to TWELVE o'clock at noon, on THURSDAY, 14th JUNE next, to be addressed to the undersigned, at the Offices of the Company in Bilbáo.—Parties sending in proposals must be prepared to present, at the same time, the written engagement of responsible persons, undertaking to enter into the required securities for the due performance of the contract should the Tender be accepted.—The Council of Administration does not bind itself to accept the lowest or any of the Tenders.
CIPRIANO SEGDO. MONTESINO, Managing Director.
Bilbáo, April 12, 1860.

TO BUILDERS.—Persons desirous of TENDERING for the ERECTION of extensive STONE TERRACES, ornamental flights of steps, doorway entrances, massive moulded edging, piers, enclosing walls, and other architectural park and garden works, together with some earthwork, and the construction of new bay windows, &c. to mansion at Byram, near Knottingley, Yorkshire, the seat of Sir John W. Ramsden, Bart. M.P. may see the drawings and specifications, and obtain copies of the quantities prepared by Mr. NORTHCROFT, Surveyor, at the Office of the Architect, WM. G. HABERSHON, Esq. 38, Bloomsbury-square, London, W.C. Application must be made by writing, in the first instance, giving reference to works done of similar character (where the builder is not known to Architect). Copies of drawings will afterwards lie at Byram, and personal attendance for explanation will be given before the Tenders are delivered, which is to be at Bloomsbury-square on FRIDAY, the 27th inst. at TWELVE o'clock. Sir John Ramsden does not bind himself necessarily to accept the lowest or any of the Tenders.

TO BUILDERS.—Persons desirous of TENDERING for ERECTION of a NEW CHURCH and PARSONAGE, at Goff's Oak, in the Parish of Cheshunt, may see the drawings and specification, and obtain quantities, at the Office of the Architect, W. G. HABERSHON, Esq. 38, Bloomsbury-square, W.C. Tenders are to be delivered to him on FRIDAY, the 27th instant, at TEN a.m. precisely. The Committee do not bind themselves to accept the lowest or any of the Tenders.

JOINT COUNTIES' ASYLUM, ABERGAVENNY.—To BUILDERS.—Persons willing to CONTRACT with the Visiting Justices for the ERECTION of a DWELLING-HOUSE for the Medical Superintendent of this Asylum are requested to send in TENDERS for the same, on or before WEDNESDAY, the 2nd day of MAY next, addressed to the Chairman of the Committee, and superscribed "Tenders for Superintendent's House." The plans and specifications may be inspected at the Office or the Clerk of the Works, at the Asylum, on and after MONDAY, the 23rd of APRIL instant, between the hours of TEN a.m. and FIVE p.m.
S. BROWNING, Clerk to the Visiting Justices.
Asylum, April 10, 1860.

TO BUILDERS and CONTRACTORS.—Notice is hereby given that plans and specification for a House and Premises for the London and County Bank, Uxbridge, can be seen at my Office, any day between the hours of TEN and FOUR. Persons TENDERING are requested to send sealed Tenders to my Office on or before the 5th of MAY next. The owner does not bind himself to accept the lowest Tender, although he will do so unless there shall appear to him to be a good and sufficient reason to the contrary. GEORGE EVES, Architect, Uxbridge.
April 17th, 1860.

The Builder.

VOL. XVIII.—No. 898.

Stoneware Pipes, and Stoneware generally.

ON the 11th, at the Society of Arts, Mr. Edwin Goddard read a paper on "Stoneware," with especial reference to Lambeth. Mr. Apsley Pellatt presided; and there was a strong muster of those who have been most active in the manufacture. Of its enormous importance it is scarcely necessary now to speak. Years ago we made

Drain and pave,

rhyme with

Raise and save.

One of the speakers on the occasion in question, who said the advance of civilization is in a great measure dependent upon the improved manufacture of earthenware, as applied to sanitary purposes, scarcely exaggerated. Proper drainage lengthens life and lessens sickness, and stoneware pipes are playing a most important part in sanitary progress, putting on one side, just now, the increased productiveness of land through the adoption of a similar course.

In our volume for 1857,* we gave some particulars of the Lambeth potteries, the mode of manufacture pursued there, and the extent of the trade that had grown up. Mr. Goddard's paper, and the discussion which followed, supply fuller information. We must content ourselves with some of the leading features, confining ourselves first to the paper :—

"I have been unable," the reader said, "to ascertain with certainty at what date stoneware was first made in Lambeth: it is certain, however, that three generations ago the little trade there was then principally in what is called Delftware; indeed, the last indication in the shape of a Delft signboard, if I may so call it, has quite recently been removed from Mr. Stiff's pottery in High-street, in building new premises. As far back, however, as 1570, we find potters crying aloud for protection. Stow, in his Survey of London, speaking of the potters, says:—'About the year 1567, Jasper Andries and Jacob Janson, potters, came away from Antwerp, to avoid the persecution there, and settled themselves in Norwich, where they followed their trade, making galley paving tiles and apothecaries' vessels and others very artificially. Anno 1570, they removed to London. They set forth in a petition to Queen Elizabeth, that they were the first that brought in and exercised the said science in this realm, and were at great charges before they could find the materials in this realm. They beseeched her, in recompense of their great cost and charges, that she would grant them house room in or without the liberties of London by the waterside.'

In the year 1688 two brothers, of the name of Elers, came from Nuremberg, and located themselves in Staffordshire, the then seat of manufacture. Here they stayed for about twenty years, practising their trade with the greatest secresy, and subjecting themselves to considerable annoyance thereby. With all their precautions of building a high wall around their premises, and employing idiots to do their labour, they could not succeed in keeping secret their manufacturing processes, and about 1710 they removed in disgust from Staffordshire to Lambeth or Chelsea. Others affirm that their removal was in consequence of persecution on account of the volumes of smoke emitted from their kilns, and inseparable from the manufacture: if so it may be inferred that Lambeth was more indulgent than at the present day. 'Too often,' says a writer of 1837, 'does research develop instances in which the existence of many of the arts has depended on police regulations;

* Vol. xv. p. 169.

FIG. 1.

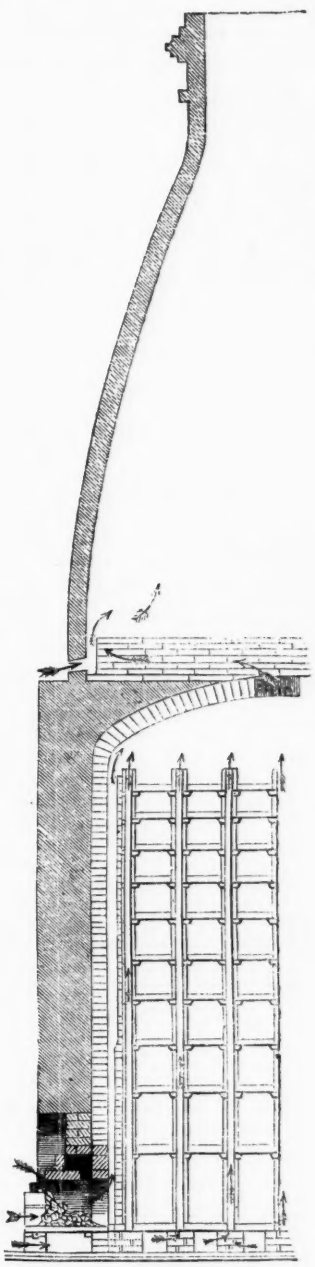
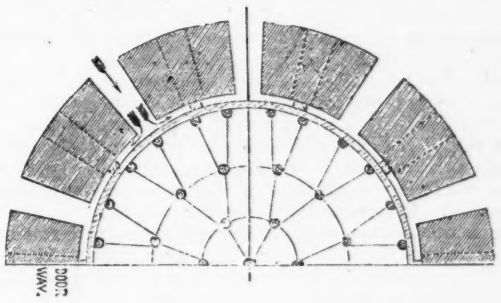


FIG. 2.



and manufacturing industry, also the manufacturer's welfare, has been rested on the frail basis of the caprice of a magistrate. Driven by ignorance, prejudice, jealousy, to a distance from materials, workmen, or market, some manufacturers continue to endeavour to surmount the obstacles which oppose their progress, and maintain a disadvantageous struggle with the difficulties of their situation.' To the brothers Elers is ascribed the introduction of the salt glaze. How long they practised in Lambeth or Chelsea: whether they were the founders of the trade, or whether the before-mentioned Andries and Janson were there before them, I have been unable at present to ascertain. A backward flight of forty years, however, will suffice to show how rapidly the trade has since been developed. I am sorry that the little time which successive snatches from business really amounts to has not sufficed to allow me to fill up the intervening century.

Forty years ago commerce had not received those aids and appliances which steam was destined to bring it: railways were only looming in the distance: the cheap postage might have been an embryo in the brains of the suggester, but no more: conveyance of all kinds was very slow and expensive, and necessarily operated strongly against so cheap an article as stoneware: raw material was not so readily obtained: salt, an important article to the stoneware potter, was taxed to an exorbitant extent—it then cost more pounds per ton than it now does shillings:—a tax, moreover, was upon all goods of a certain size, and free trade had in no way blessed the land. In the face of these impediments it is not to be wondered at that the market was limited, and a healthy expansion of the trade prevented. The potters then in Lambeth were in number some six or seven, working some sixteen small kilns of 7 or 8 feet in diameter, the produce of each kiln being under 20*l.* worth of ware, the principal articles made being blacking bottles, ginger-beer bottles (very extensively made still), porter and cider bottles (not so largely made now), spruce-beer bottles (gone, with the beer, quite out of fashion), ink bottles (more used now than ever), oil bottles, pickle jars, hunting jugs, &c. A few chemical vessels were also turned out well from one kiln belonging to an eccentric individual, whose chief boast was to drink a gallon of beer a day, and do without rest on Sundays. The introduction of new blood and energy, however, induced an active competition, and soon sent them to other fields, and stoneware was found to be just the thing for articles which were previously unthought of, but which now, with others, form standard products. The trade gradually assumed a healthy vigour, and steadily increased up to the period when the Board of Sewers discovered the advantages of stoneware drain-pipes, and the subsequent overwhelming demand for them completed what energy and enterprise had begun, and brought the trade up to its present position."

When speaking of the manufactured goods introduced, Mr. Goddard mentioned filters, the necessity for which is still ignored by the mass of the public. Their introduction to any extent is due to the celebrated George Robins, and the quantity made for him and scattered broad-cast through the land is surprising. The utmost means of Messrs. Stephen Green and Doulton & Watts were insufficient for a time to meet his requirements. The filter trade is still a very important item in the Lambeth potteries, and large numbers are annually exported. He referred to a company, upon the point of forming, to supply a cheap filter at a rent of a few shillings annually, to be placed in the cisterns of the house to be supplied. It is a vessel of stoneware, of a simple form, having a pipe attached, with tap to draw over the side: it is filled chiefly with animal charcoal, arranged to filter quickly.

"The clay best suited for making stoneware is brought from Devonshire or Dorsetshire, and recently a deposit has been found at Farnham, in Surrey: the main supply, however, is from the two first counties. Cornwall sends a small proportion of prepared clay, which, though principally used for chinaware, is, nevertheless, in a degree, employed in Lambeth. The best quality of stoneware clay is found at depths varying from 20 to 50 feet from the surface. After cutting through an upper deposit of waste mould, &c., 10 to 40 feet thick, we reach a very aluminous bed of clay, about 3 feet thick, called 'Tough Tom:' beneath this is a bed of a very useful clay for the common kinds of ware, from 5 to 10 feet thick: to this succeeds 4 to 5 feet of 'domestic' clay, used in the north of England very largely for whitening stone steps, &c., which brings us to the stoneware clay proper, from 10 to 16 feet thick. Beneath this is the tobacco-pipe clay, formerly used for the same purpose as the best white clay is now, until about some forty-five years ago, when, at the suggestion of Mr. Duggan, the London proprietor of the stoneware clay, Mr. Stephen Green's father introduced it as a substitute for the tobacco-pipe clay, which it has now quite supplanted. I may here add that to Mr. Stephen Green is due the introduction of the string wheels, the moulds for bottles, and the turning lathes before alluded to."

After describing the pug-mill and the mode of working the clay, he said,—

"At the commencement of this paper I stated

that my remarks would chiefly, if not exclusively, apply to stoneware, or salt-glazed ware. As, however, the more fastidious taste of late years has almost ignored the use of salt-glaze for articles of domestic use, the present appearance of Lambeth ware is not of stone, but of a dipped glaze. This kind, called 'double-glaze,' from being glazed by two processes, one inside and one out, ensures a uniformity of colour which cannot be produced in the salt-glaze; and whilst the latter, from its being part and parcel of the vessel itself, is the best, the former is thought to have a better appearance. It is secured by dipping the article into a composition of glass, Cornish stone, and other ingredients, fusible at a high degree of heat. For large vessels, this is, of course, impracticable; nor is it adapted to resist the action of acid to the same extent. Now the heat to fuse these ingredients is about the same as that required to convert salt into a glaze,—hence the simple plan of throwing salt into the kiln.

The constituents of the clay being about two-thirds silica and the remainder alumina, with a little alkali, when the kiln is at the highest (suppose about 1,900 deg. Fahr.), the ware is in the condition requisite to take up a certain amount of the soda contained in the salt vapour. The two combining, not only deposit a surface of glaze on the vessel, but the glass thus formed permeates the interstices of the fine particles, thus becoming incorporate with the body, as is easily seen under a lens."

In describing the kilns used in Lambeth, he mentioned a recent invention, being patented in 1858, by Mr. John Cliff, of the Imperial Potteries, Lambeth. The invention has for its objects, firstly, great economy of space; secondly, economy of fuel; and thirdly, the more thoroughly consuming of the smoke than by kilns of the ordinary kinds.

In the accompanying woodcuts, figure 1 is a vertical section of half a kiln of this kind, and figure 2 a plan.

To effect the economy in space there is built within the lining proper of the kiln, and at various distances from it (according to circumstances), a second lining from the floor to the level of the commencement of the arch of the kiln, leaving an annular space round the entire kiln (supposing it to be circular), from the base or floor line to the spring of the dome: at the base of this circular flue, and at intervals, are holes to connect it with a hollow chamber under the floor of the kiln, in which floor are left a number of holes at proper distances, over which are erected a series of perpendicular flues, terminating on a level with the before-mentioned inner lining, or slightly above it by the means of variable lengths of hollow pillars and collars of larger diameter, as shown. These variable lengths of pillar and collar allow of constructing quarry floorings across the kiln at any desired height, and thus utilize a large amount of space hitherto impracticable. The floor of the kiln and the top tier are fitted close, so that during the burning no flame, smoke, or draught can approach the ware, thus effecting a rapid accumulation of heat within the kiln to the point required, and by the removal of one quarry opposite the door or entrance to the kiln, and four or five slabs from each tier of the middle row (supposing the kiln to be circular), the kiln can be filled and emptied with an amount of ease and rapidity not attainable in the ordinary mode.

To effect the combustion of the smoke, cold air is introduced by means of an opening from the front of and on the top of each fire arch, behind the burning fuel. The smoke in its passage up the narrow annular flue, and up the hollow pillars, by being so much divided, and having to travel over so much more than the ordinary heated surface, is more efficiently consumed, and is again met at its exit into the funnel by streams of atmospheric air passing in at openings through the base of the same.

A kiln of this description, 14 feet in diameter, will burn 100*l.* worth of ware with about eleven tons of coals, whilst a man, with four boys in turns, may set, burn, and draw it once every week, at a breakage loss of about 9 per cent.

"The improvements in machinery, &c., made to meet the increasing demand for stoneware, have of course helped its extension; and in the laboratory, for sanitary improvements, or domestic use, it plays an important part. I before remarked on the impetus the trade had received when drain-pipes in stoneware were adopted: now, as these have to conduct sewage containing the strongest elements of decaying and decayed matter, it becomes a primary necessity that the conduits should neither absorb, nor in any way retard, the flow. Accordingly, the first object of the Lambeth potters is to secure a thoroughly vitrified body with a perfectly smooth internal surface. Their system of glazing by salt had the advantage of securing these *desiderata*, inasmuch as no glaze could be formed if the heat was insufficient, therefore a pipe deficient in glaze would show that it was short of burning also. However, the mistake, which in the trade is too likely to be made, of considering low-priced goods as cheap goods, has been the means of bringing inferior pipes into the trade, so that many with partial burning and common clay are little better than a common red-ware pipe. Mr. Northen is admitted to be the original maker of pipes in Lambeth, and Messrs. Doulton, at the present time, are the most extensive. At one time there were forty kilns in Lambeth burning pipes; and allowing them to be filled with 9-inch, 6-inch, and 4-inch pipes, to the value in gross of say 50*l.*, these kilns would be turning out nearly 600 miles per annum.

The present state of trade in Lambeth, when contrasted with its position at the period I commenced, affords a satisfactory picture. In place of some sixteen kilns, turning out each under 20*l.* per kiln, we have now about seventy, turning out each perhaps on an average 50*l.* They consume upwards of 20,000*l.* tons of coal, paying a corporation tax of say 2,100*l.* per annum. The law requires this quantity to be burnt without smoke; and, after immense cost and labour, this difficulty may be called surmounted. Twenty-three thousand tons of clay are annually changed into useful articles, giving employment to more than 800 persons. The returns of the Lambeth potters cannot be estimated at less than 140,000*l.*"

The paper concluded with the expression of an opinion, that every potter should be his own chemist, so far as his trade is concerned. He should have at his fingers' ends the qualities and actions of each element he has to use, composed and decomposed; and, when he is as perfectly *au fait* with his chemistry as he is at present with other branches, he will have added a new dignity to his ancient calling, and will enjoy his success all the more by having deserved it.

In the course of the discussion which ensued,—

Mr. Stephen Green said he thought the outline given of the trade as it at present existed, and as it had been developed during the last quarter of a century, was quite correct. There were various kinds of pipe-squeezing machines, but that most in use and most in favour, he believed, was the one patented by Mr. Spencer. Several of these machines were in use at Lambeth and elsewhere. The apparatus he rather preferred was something like an Archimedean screw, divided into several parts, and did its work very well. The advantage of that plan he considered to be, that the operation was continuous. There was no stoppage to fill the machine with clay. The screw carried the clay down, and the machine worked as fast as the clay was put in. He, however, believed it was not generally considered to be so good a machine as that patented by Mr. Spencer.

Mr. John Doulton addressed the meeting at some length, and amongst other things said the question had been started, what was stoneware? Mr. Goddard had adopted the definition given in the official catalogue of the Great Exhibition, which said, "Stoneware is a dense and highly vitrified material, impervious to the action of acids, and of peculiar strength." He thought that might be taken as a just general definition of stoneware. But it went on to say, "It differs from all other kinds of glazed earthenware in this important respect, that the glazing is the actual material itself fused together." That referred to the *glazed* stoneware,—one section only of the manufacture,—and he thought it wrong to call that only stoneware which was fused, in which a portion of the silica on the surface of the clay was fused by the salt. Stoneware was, in fact, a dense, impervious, sonorous material, and might be glazed or unglazed. With regard to the date of the introduction of this ware, although pottery was of most ancient date, he thought this particular description of ware was of modern origin. Formerly our pottery was of a porous nature, and he believed, until within the two last centuries, no ware had been made in England except of that character. The rough description of ware was glazed with lead for a red colour, or with manganese for black; and no ware superior to that was made until the year 1788, when the brothers Elers came from Nuremberg, and settled in Burslem, in the Staffordshire Potteries. He thought the individuals previously referred to by Mr. Goddard brought the knowledge of delft-ware into this country, but the first introduction of salt-glazed stoneware was made by the brothers Elers, who commenced their manufacture at Burslem. It was true they met with difficulties in their manufacture, through the jealousy and suspicion of the people, and, perhaps, naturally so, for during the salting process the dense mass of white smoke was suffocating and hurtful to the chest, and the people, not being acquainted with the nature of the glazing, supposed it to be deleterious; consequently the brothers Elers left the neighbourhood, and came to London; but before this their secret of glazing had been discovered, and the trade was continued in the Staffordshire Potteries, and advanced in an important degree. He agreed with Mr. Goddard that a rapid advance, in this salt-glazing stoneware in London, had been made within the last thirty or forty years. He, however, did not think that Lambeth had always been the principal manufactory of salt-glazed ware. It thrived in Staffordshire for a long period, and he believed that the brothers Elers had made their ware at Chelsea and Fulham, before it was made in Lambeth; but that locality had now become the centre of the salt-glazed ware, although it had been but little developed until within the last twenty-five years,—in fact, only since the absurd excise regulations had been removed. A duty was placed upon articles of a certain size, and it cost more to collect the duty than it realized to the Government. When these restrictions were removed, the trade made rapid advances. But there were other reasons for its advance. There was not only the introduction of spring wheels and lathes, but a great impetus was given to the trade by the manufacture of stoneware drain-pipes, as mentioned by Mr. Goddard. As to the kiln patented and used by Mr. Cliff, there was one remark made by Mr. Goddard with respect to that kiln, which he thought would not make his brother potters anxious to use it, and that was that there was about 9 per cent. of breakage. He thought they would prefer a kind of kiln which had not been described in the paper, which had slabs or cupboards throughout the kiln, from bottom to top, and which was the kind of kiln now principally used in Lambeth. As to Mr. Goddard's statistics. He had stated 20,000 tons of coals per annum as the consumption of the Lambeth potters, but he (Mr. Doulton) found that his own firm used 9,000 tons, and considering there were eight or ten other firms, it was reasonable to suppose that they used more than 11,000 tons between them. Then as to the quantity of clay used, it was stated that 23,000 tons were used at Lambeth. His own firm used more than a third of that amount, and he thought that Mr. Goddard must have underrated the amount of trade carried on.

Mr. G. F. Wilson would add one word to the remarks which Mr. Stephen Green had made upon this branch of manufacture. As a neighbour of that gentleman in the "land of darkness," he had the opportunity of hearing the opinions of two of the greatest chemists in Europe, Chevreul and Ebelmann, who went to this "dark" Lambeth with the object of going over Mr. Green's manufactory, and who stated to him (Mr. Wilson) that the perfection of the arrangements and the beauty of manipulation there put to shame the foreign manufacturers.

Mr. Robert Rawlinson said, having paid a good deal of attention to this subject, not as a manufacturer, but as a user of stone ware, he would offer one or two remarks. With regard to the method of mixing the clay, he had been through Staffordshire officially and non-officially, and he had observed what he considered the bad method of mixing the clay, and he was told that it could not be improved upon, and that no description of machinery would get the clay into so good a condition as the old-fashioned mode of slicing and wedging. With regard to socket-pipes, he dared say many people claimed to be inventors of earthenware socket-pipes; but he had been surprised, during his stay in Asia Minor, in 1855, to find Turkish and Greek workmen repairing an aqueduct leading to a hospital on the banks of the Bosphorus with this very description of socketed earthenware pipes, about 4 inches in diameter and 13 inches long. He found that de-

scription of pipe had been made there from time immemorial for water, and they were buried to the extent of thousands of miles in that part of the East, and probably in India. These pipes were exactly similar to the socket pipes now in use in this country. With regard to the use of pipe-making machinery, he thought they were upon the eve of great improvements. He did not know why architects should care about having fret-work in perishable stone when they had a material like stoneware, in which they could get ornamental forms, which, at the end of a thousand years, would probably be as perfect as they were at the present time. He also thought a great deal might be done with this material in Gothic tracery. He believed architecture had injured itself materially by the use of stone for purposes to which stone ought never to have been put; and one of the greatest mistakes of modern times was to be found in the use, in the Houses of Parliament, of stone cut into elaborate tracery, and exposed to the action of the elements on all sides, for it was already crumbling away. In reply to an inquiry whether any gentleman could inform him about what date the first earthenware drain-pipe was introduced,

Mr. Northen replied that, on the 9th September, 1845, he sent the first drain-pipe to the Board of Sewers.

Mr. Rawlinson added, that the form and quality of drain-pipes had been a battle-ground with engineers. The Big-endians and the Little-endians of Lilliput were as nothing to the wars respecting earthenware pipes for sanitary purposes. He had laid, or caused to be laid, between 100 and 200 miles of pipes, and he believed the advance of civilization was in a great measure dependent upon the improved manufacture of earthenware, as applied to sanitary purposes. To show the extent to which this manufacture had grown, his friend Mr. Doulton told him, some time ago, that his make of pipes could not be less than from 6 to 12 miles per week, whilst some thousands of ordinary soil-pans were turned out from his manufactory in the same time. From this statement they might imagine what an extent of work was done. He held that, by the proper use of 30 or 40 yards of this material, they had one house properly drained. He considered the proper drainage of one house was the lengthening of one life perhaps ten years, and a saving of an amount of sickness which he would not attempt to estimate.

Mr. Newton remarked that attention had been called by the last speaker to the question who was the first maker of earthenware socket-pipes. He believed that to Mr. Northen that honour was due. But Mr. Goddard having alluded to the fact that machinery had not been applied to this manufacture to the extent that might have been anticipated, he would refer to the name of Spencer, which had already been mentioned in this discussion. That gentleman had introduced a machine for socketing the pipe at the time it was made. By means of machinery the pipes were made of uniform size and fitted accurately one into the other; consequently they were much superior to those made upon the mandril. By the same patent, an improved quality of flower-pots was manufactured, and pipes 3 feet in diameter were turned out by it, which had never been obtained by any other process.

Mr. Goddard replied to some of the points raised, and said, as to the 9 per cent. of breakage in the patent kiln, that was perhaps an incorrect expression: he should have included bad and useless articles. He questioned whether Mr. Doulton turned out a 100*l.* kiln of goods with less than that amount of breakage and bad articles.

The Chairman, in winding up the discussion, and proposing a vote of thanks to Mr. Goddard, which was carried unanimously, said, looking at the price of coals and labour in London, and the price of the clay from Devonshire, the manufacturers of Lambeth must have a large amount of intelligence, industry, and machinery, to enable them to compete with those parts of the country where they obtained coals so much cheaper.

STREET-RAILWAYS AND TRAMWAYS.

At the close of our leading article, last week, on Metropolitan Communications, we arrived at the point of considering whether the railroad system, which in the country ought, if possible, to be extended to districts at present not served by it, could under some form be adapted to streets of London, so as to promote the object of getting rapidly from one part to another of the metropolis.

The whole question has been frequently taken up by us, and in letters which we have printed; and in our volume for 1857 (p. 639), we noticed a pamphlet by Mr. Edmund Sharpe, architect, wherein the subject was lucidly examined chiefly in relation to the system for the country.* The same question, with that of details of street-railways, having in the interim, been again taken up in our pages, another and a forcible statement of the points has just now been published in the form of a pamphlet by Mr. Charles Burn, civil engineer, which contains besides some useful calculations of cost, several illustrations of different forms of rail and way, designed by the author and others, adapted for streets.†

It would be admitted by those who have heard anything of the street railways and tramways of New York and Philadelphia, or who have seen the use which has been made both by railway carriages and the omnibuses, of the rails along the line of Liverpool Docks, that rails or iron tramways for vehicles drawn by horses, may be laid in streets with great advantage to the traffic of the ordinary kind. An apprehension has prevailed in London that they are inapplicable unless with widened streets; and the objection seems to have led to the failure of the attempt made by a company to introduce a line on the New-road. The Marylebone people opposed; and their member, then Sir Benjamin Hall, procured the rejection in Parliament of what, with proper restrictions, might have become an important measure of improvement. It follows, however, from the success of the regulation of the traffic over London-bridge, that similar regulation which would be effected by the provision of rails, would be beneficial rather than otherwise in the narrowest streets, provided the rails were not raised above the street level so as to interfere with traffic across them, and beneficial as now may be observed on the new Westminster-bridge. In New York, narrow streets as well as the wider streets, are made the route of the railway; though in some cases where the width does not suffice for two lines, one street serves for the line one way, and the next street for the return line. In narrow streets some provision of the kind is most useful to prevent noise and vibration, as well as splashing; and we may just direct attention to the fact that, whilst such lines make less dirt, and some are more readily kept clean than ordinary pavement, dust, with other finely divided matter from the streets, filling the air and respired by every one in towns, is a great source of disease.

The provision, whether of confluent lines for locomotives, of street railways of any kind, or of iron or stone tramways, is not to be taken as rendering unnecessary the opening out and the widening of existing thoroughfares; but the railway principle, for horse-draught, should enter into the planning of all main streets, if not of every street. The horse-power even has an advantage in its favour over the locomotive, namely, that it is exerted on a different surface to that of the rails, and consequently has greater effects proportionate to it. Knowing the importance of the subject, we are glad to see that it is at length receiving the attention not confined to the pamphlet or our own pages. It has been discussed from time to time in the *Engineer*, in which journal many forms of rail suited to streets have been engraved. We lately noticed Mr. Haywood's Report to the City Commission of Sewers on Mr. J. B. Redman's scheme for iron tramways in lieu of those of granite which have been used in many streets, and in the Commercial-road since 1829-30, and are not found sufficiently durable. Mr. Redman's proposal, indeed, is merely for broad, flat, wheel-tracks, not for narrow rails suited to grooved wheels: but on all such surfaces, a horse can draw at least twice as much as upon an ordinary pavement. The advantages of duration and cost appear to be in favour of iron as compared with stone. At Liverpool, the omnibuses along the line of the docks have been some time furnished with flanged wheels, which, by a peculiar contrivance of India-rubber seating, adjusted themselves so that the carriages could be driven either along or off the line of rails. Some interference by those exercising control over the line having been made with the proprietors of the omnibuses, a scheme has been devised applicable to the principal streets of the town. The case of Liverpool is not alluded to by Mr. Burn; but we believe the proposal is for a single line in the centre of each street, the omnibuses to move off it to pass one another or when required by the other traffic. If this be correct, it affords better answer to the objections sometimes made against the rails in streets than any we could otherwise find. Mr. Joseph Kincaid, in a report to the Messrs. Busby, proprietors of the omnibuses, speaks of the practice of the ordinary waggons, whilst on their proper side of the road, to keep one wheel on the rail when they can, to ease the draft. A similar practice exists in the city of London, as to the use of the stones or tramway next the kerb of a footway; but by the practice as in Liverpool, it appears neither kind of traffic is interfered with, and the drivers of waggons are induced to keep to their proper side. It is thought there would be advantages found on taking up the pavement to lay pipes, from the division of space by parallel lines.*

The tramway on the new Westminster bridge is of the simplest kind, as required for the variable gauge of wheels. Should rails become general, a gauge would be chosen, and vehicles would be built with their wheels to fit it, as at New York. The bridge-way has the horse-track slightly above the level of the wheel tracks; but the whole must be regarded as temporary only. Mr. Burn has figured about a dozen different forms of rail, including one the same as that just mentioned, but nearly all are laid to be flush with the surface. The form which he himself proposes has a thick top flange of $1\frac{3}{4}$-inch breadth, as the wheel track; whilst there would be no groove formed, as in all the other cases in the rail; but the groove would be cut out of the metalling or pavement of the roadway—the flange of the wheel being considered sufficient to keep the groove clear. Broad wheels, without flanges, would, we suppose, run on the narrow rail easily.

Although tramways are to be divided into two classes, those for ordinary vehicles, and those for flanged wheels, and it is essential that the ordinary vehicles should be, if not served, not interfered with by the system chosen, the object to be attained is that of horse-railways in streets, with all the advantages of a rail of the best description for such special purpose. Into the question both as regards streets, and the lines throughout Great Britain and the colonies, the author enters fully,—indebted, however, in one branch of the argument, to Mr. Sharpe, as he acknowledges. He begins by remarking the low rate of interest paid by English railways, resulting, in great degree, from expensive branches; whilst there is want of railways, both in populous districts and those which are some distance from a main line. In one case, such as that of the London suburbs, the existing stations and branches are not sufficient; in the other case, construction of an expensive branch does not pay. Therefore, feeders, are required, which, with the carriages on them, may involve much less expense than ordinary railways per mile,—be those branches for locomotive, or as here chiefly proposed, for horse traffic. By using the common roads, on which to lay the rails, only deviating where there might be extraordinary acclivities, the chief expenses would be avoided. The lessening of weight by disuse of the locomotive engine, alone involves great gain.

Horse-railways have been carried out to a small extent in several European countries. There is a line from Paris to Versailles. We may add to the instances which Mr. Burn gives of street railways, that there is one at Genoa which is worked by locomotive engines. In the United States, more than 250 miles of the horse-railways in streets have been laid down, our author says. They have been often described lately. There are 90 miles in Philadelphia, and 70 miles in New York and Brooklyn. Gross receipts are three times more per mile than on the Eastern Counties line, and half as much again as on the London and North-Western. Working expenses are 70 per cent. of the receipts. Notwithstanding there is waste of capital, the companies pay from 10 to 14 per cent. An article in a recent number of the *New York Times*, after going into statistics, says,—"Now, we affirm, and we do not believe there is a single person who may read this article who will not agree with us, that the annual gross earnings of the city railroad exceed their cost, and that their annual net earnings equal 40 per cent. of their cost! Here, then, is a *placer* exceeding any ever yet opened in California." * * * "The city railroad is as much an improvement, almost, upon the former mode of city locomotion, as were railroads over the old highway." On one of the New York lines

* "A letter on Branch Railways, addressed to the Right Hon. Lord Stanley of Alderley, President of the Board of Trade, containing suggestions for the creation of a system of secondary railways for the agricultural districts."

† "On the Construction of Horse Railways for Branch Lines in England and the Colonies," 8vo. pp. 59. Six plates. London: John Weale. March, 1860.

* "Remarks on Omnibus Railways," by Joseph Kincaid, Jun., Civil Engineer. 8vo., pp. 16. Liverpool, February, 1860.

they carry passengers at the rate of 10 miles per hour; and the charge seems to be under ½d. per mile. The vehicles carry fifty or a hundred passengers; and are preferred to the ordinary omnibuses.

An experiment might first be made on one of the London roads to the suburbs. A Bill (which, from mismanagement that we have before complained of, we were not able to procure on sending for it) has been introduced in Parliament, by Sir Robert Ferguson, for facilitating internal communication in Ireland by tramroads; and we rather think there is some similar measure for this country, promoted by the "Anglo-French Improved Tram Railway Company," whose operations, however, appear to be intended mainly for France. Mr. Sharpe argued in his pamphlet that it was not necessary, and would not be judicious, to adopt the gauge of the main line in the feeders to it. This may be noted by those who have felt the difficulty we spoke of in our last article, the change of carriages; but that difficulty Mr. Sharpe well considers, and perhaps meets. Mr. Burn would have the gauge 3 feet 6 inches for country roads, and 5 feet 6 inches for the streets, having regard to the gauge of the new omnibuses, 5 feet 6 inches, and the requirements for horses' tread.

The central line might be all that could be accomplished in the present London-streets. The necessity for allowing the ordinary vehicles space to set down next a footway, is not noticed by Mr. Burn. The expense of permanent way, stations, horses, and rolling stock, with compensation and contingencies, our author calculates as 2,250*l.* to 2,737*l.* per mile, according as one or another form of rail be adopted,—his own appearing to be the cheapest of three which are estimated. But this would be for single and country lines. For double lines in towns, the cost would be 5,000*l.* per mile; and he thinks that such lines might pay at least the highest dividend of those in the United States, or 15 per cent. For the interests of shareholders of existing companies, it would certainly be well to attempt the provision of these horse-railways as feeding lines.

When it is found that the accidents caused by vehicles to persons, in the City of London, are, in about one year, 223 in number, of which forty-nine have been of persons run over, and 118 those knocked down and injured, there is here sufficient reason for considering the subject of improved metropolitan communications, further than it has been pursued. The danger, however, is one thing, though it is itself cause of loss of time to pedestrians; but the state of the carriage traffic is a constant source of inconvenience in other respects. The whole subject of metropolitan communications should have at once the attention of the Metropolitan Board and the City authorities, as well for the reasons which we have alluded to, as with a view to the residence of the working-man in districts that he might reach in the country, at lessened cost than on the present system, and under less deprivation of time. Mr. Pearson has seemed to think that the Metropolitan Railway would give the benefit to the working man, for about 1s. per week. But much more than this new line, or than the availableness of Charing-cross for half the number of the London-bridge passengers as computed, that is to say, something different, is, by London, required.

SANITARY PROGRESS.*

SANITARY progress cannot possibly be either explained or discussed within a limited space. I can tell you some little of what has been done, of what is now in hand (within my knowledge), and of the vast amount of work to be done. As you are aware, I have taken part in the sanitary movement; but my desire is not to speak of myself, but rather to direct your attention to sanitary questions, and, if possible, to convey some practical information. Like all questions, the sanitary question presents its white and its black side, according to the point of view from which it is first seen. Like the knights in the fable, engineers have cried out "black," "white," and the war has been carried on to a most unwarrantable length. If the evil only fell upon the disputants, we might leave them to fight the question out, but much mischief is done to the general public. I was never an advocate for an exclusive use of earthenware pipes for sewers, neither have I been so foolish as to repudiate their use. Whoever can lay claim to the invention of earthenware pipes for sewerage and drainage purposes may justly feel proud; few inventions are likely to prove more beneficial in the sanitary progress of the age. Earthenware pipes, true in form, thoroughly burned, and well laid, are far superior to bricks for sewers and drains, up to the capacity of the material. I do not use earthenware pipes beyond 18 inches diameter, rarely beyond 15 inches. I do not, however, say that pipes of larger diameters are not to be used. This must depend upon the material (clay), the make and the relative cost, as compared with brickwork. Small towns and the largest houses may be sewered with earthenware pipes far more effectually than with brick sewers, and earthenware pipes may be so laid as to make choking impossible.

A large amount of work has been executed in sewerage, drainage, and town improvements during the last ten years, and works of a similar character are quietly progressing in many districts. Town sewerage works may have failed in some places from defective design, from inefficient management, and, in certain cases, from natural obstacles,—quicksand, subsoils—&c. There has also been some blundering in outlet works for disposing of sewage; as at Leicester, rivers and streams have been fouled; as at Croydon, Hitchin, Birmingham, Bradford, and manufacturing towns generally. One great good is, however, gained where sanitary works are properly carried out: the poor are more comfortable in their dwellings, and the public health is certainly improved. Those who repine at the tainting of streams and advocate "a judicious return to cesspools" should fairly weigh the sewerage question as affecting human life where human life is of most value. Foul rivers are no doubt a great evil, and inflict serious injury on property; but foul cesspools are a much greater evil, inasmuch as they destroy health and shorten human life. The Sewage Commission, it is hoped, will find a practical way of escape. This must not, however, be by returning to any practices which are proved to sacrifice life in towns. In proportion as cesspools have been abolished health in towns has improved and life been prolonged. Hot summers and a foul Thames have not seriously increased the mortality in the metropolis, but for the last ten years there has been a marked and recorded improvement, as may be seen by reference to the Registrar-General's and City Officer of Health's returns. Some recent remarks in the *Revue Municipale*, Paris, require an answer, because the inferences intended to be conveyed are certainly erroneous and may mislead. It is truly wonderful how much may be written and said on any subject before any practical benefit is developed, and how plainly a fact may be presented to the mental vision and yet not be seen. The question is now discussed, whether the Paris of 1760 was more or less salubrious than the Paris of 1860, and the writer in the *Revue Municipale* comes to the conclusion that, in a sanitary point of view, the former was greatly superior to the latter. I am not going to deny the correctness of the conclusion that the proportionate mortality may be higher in the Paris of 1860 than in 1760, because this is a question of figures; and, if the annual returns are reliable, and if they show this to be the case, I accept the fact. But now for the statements and inferences of the writer in the *Revue Municipale*:—

"In 1760 Paris covered less ground, and did not contain more than 600,000 souls. There is now a population of 1,800,000,—that is, three times as many. Numerous gardens and open spaces of old Paris have been covered with buildings. In the new Paris, 193 narrow and dirty streets and lanes have been erased from the map, crowded churchyards have been closed, private slaughter houses within the city no longer exist, the streets are swept much better, the mud and filth removed both speedily and regularly, the supply of water is infinitely superior, the sewerage has been immensely improved, the houses which were built on the bridges in 1760, obstructing the passage of air and light, are now gone."

And yet Paris has retrograded in health and chances of life. If an enemy had said this, how terrible would have been the wrath of the Parisians! That it can be said with truth, is a fact so astounding and so momentous as to require further investigation, and, in some form or other, a sanitary work or works of real improvement. Englishmen have been told to look at Paris to learn how city improvements ought to be carried out; and Englishmen have looked and have admired, and wondered; but it now appears a whited sepulchre, and not an improved city, has been the object of "the world's gaze." The Parisian writer infers that the spread of building over the seventy-eight parks within the fortifications prevents the sweep of the pure country breeze. Then there are gas-works and leaking gas-pipes, exhaling a suffocating stench. "The water in the wells, not fit to drink, because it filters through the cemeteries and sewers of the city, is yet used by the bakers to make bread; and rich wines are weakened by it for the market" (comfortable news, this, for the lovers of Parisian bread and wine).

"In 1760 there was not a single manufactory in Paris. Now there is nothing to be seen from the heights that overlook the city but a forest of high chimneys, all emitting volumes of a thick, pungent smoke," &c. And so the writer sums up that "the conclusion in favour of the salubrity of Paris in 1760, compared with that of the present day, need, therefore, excite no surprise." So much for the account in the *Revue Municipale*. To my mind, a most lame and dangerous conclusion, which, in myself, excites great surprise. But now for a few facts more on this momentous question. Paris has increased in its superficial area, in its population, and in its trade; but not more than London and many other towns in England; and, as to gas-works, leaking gas-mains, foul subsoil, and smoke-tainted atmospheres, we can more than match Paris in these nuisances; nay, we can fairly challenge, not only the capital of France, but all the world. Have we not London smoke and London fog? Look, also, at Swansea,—coal, smoke, and copper smoke; at Birmingham, and at the coal and iron district of Staffordshire, at Manchester, at Newcastle-upon-Tyne, and at the surrounding coal district. Then, have we not the foul Thames, and the far fouler river Tame at Birmingham, and rivers Medlock and Irwell at Manchester? In all these places, areas, once country, have been turned into town. We have also spent vast sums on street-widening, on new sewers, and on gas-works, and the Registrar-General says we are greatly superior in health and longevity in 1860 than in 1760, and that year by year, since 1845, the mortality in all our great towns has been reduced in proportion as improvements (abolition of cesspools) have been carried out in England. There has been this one important difference in the sanitary works of the two countries, and this has been mainly owing to the correct judgment of Edwin Chadwick. Cesspools have been established and are retained in Paris, but have, in thousands of instances, been abolished in England. Let any one glance over the early sanitary reports issued by the much and wrongly maligned General Board of Health, and they will find this doctrine over and over again enforced, namely, the cleansing, disinfecting, and filling up of cesspools; and, the immediate removal of all solid and fluid soil-refuse, from the vicinity of dwelling-houses by sewers and drains. The French sanitary practice has been the reverse of this. In Paris vast sewers have been made, but only to remove surface water, and vast cesspools have been constructed, and now exist, in full use, in which all the soil and urinal refuse is stored, to be emptied at intervals. But, fermentation and evolution of the gases of decomposition go on continuously, and the most perfect known means are used to concentrate these gases, by "hermetically sealing the cesspools." In a report on the cesspools of Paris, made in 1848, we learn that in early times the excavated cesspools, or pits, were constructed in the rudest manner, and cleaned out more or less frequently or utterly neglected, at the discretion of their owners. In 1819, a strict ordonnance was issued on the subject, laying down stringent regulations both as to the structure of cesspools, fixed, and movable, and their mode of emptying. The execution of this ordonnance is entrusted to the prefect of police. The fixed cesspools are masonry constructions, water-tight and air-tight. The cesspools vary considerably in foulness, evolving sulphuretted hydrogen gas: soap-suds are said to add materially to their offensiveness: ammoniacal vapours are given off—sometimes produce temporary blindness in the men employed to empty them. Such is a brief abstract relative to the Paris cesspools. The writer in the *Revue Municipale*, as quoted, does not, however, name them in the list of improvements effected.

All these cesspools are connected with closets, and the closets with the houses; the gases force a way into court, closet, corridors, and rooms, as most strangers find out when they visit Paris. The grand sanitary secret and sanitary blunder rest here, in these vast *pseudo-hermetically* sealed cesspools. An open cesspool may be dangerous to health; or, it may be merely a nuisance, because there cannot be concentration of the injurious gases; but the breath of a closed cesspool is most certainly death. There is, probably, something more in it than mere stink,—something electric. Who has not suffered from the terrible sensation in a Parisian hotel? The suffocating odour, which open windows and doors do not drive out, nor even perceptibly diminish; and, at some points, there is an invisible stream or ray of smell, which cuts the nostril, as it were, like a knife. Woe to the un-

* By Mr. Robert Rawlinson, civil engineer, read before the Liverpool Architectural Society, April 4th.

fortunate individuals doomed to breathe in such an atmosphere: the year 1760 had nothing so pernicious.

In the narrow streets and foul gutters of the old city, the solid and slop refuse were thrown out to be dried by the sun, to be washed by the rain, and to be exposed to continuous dilution; so that, although sight and smell might both suffer, there could not be any gas so subtle, strong, and dangerous as that from the modern closed Parisian cesspool.

There are many opinions on sanitary matters at present, and probably no individual who has thought much on the subject is altogether right, or altogether wrong. One man asserts that putrid matter and foul smells are injurious to health, producing fevers and cholera; another boldly and stoutly denies these assertions, and points to many workers amongst nuisances, and recently to our foul rivers,—the Thames especially,—as proof that bad smells do not generate diseases in excess.

I have, during the last twelve years, examined many places in England, and I never found disease in excess without finding sufficient local cause. I have since then seen a British army, in hospital and in the field, suffering under the most terrible and fatal mortality on record, and chiefly from like causes. Last autumn I traversed a considerable portion of the north of Europe, visiting several of the capitals and towns,—Stockholm and Copenhagen, Gottenburg, Hamburgh, Cologne, and Hanover. These places have, like Paris, been vastly improved above ground since 1760; but with little, if any, advantages to health and longevity. I have no doubts as to some of the causes of the high rates of mortality,—they are cesspools and defective ventilation. Fresh air is dreaded as a mortal enemy. Man is a wonderful compound of animal and spiritual, and an infinity of things may tend to disarrange his marvellously refined, delicate, and complex organism; but he appears to require three things for the enjoyment of perfect health,—pure air, pure water, and wholesome food. Pure air and pure water are seldom obtained, and much food is eaten which is not wholesome, and yet men live; but they do not live out half their days. The "threescore and ten" of the Psalmist is cut down, for the mass of mankind, more than half. There are, however, many causes for this premature mortality. We may point to some of the most palpable; but who shall even indicate the whole? We can show that, as cesspools have been abolished in London, the public health has improved, and we can point to Paris for a contrary result.

The French writer to whom I have alluded should, however, take in a wider range for sanitary observation than the last century,—go back to "the good old times," the "middle ages." I remember reading of plague, of sweating-sickness, and of other forms of disease which swept, at times, more than a moiety of the population of Europe to premature graves; I have also read of the dreadful mortality which took place in hospitals and in gaols in all the kingdoms known to civilized man, and have not only read of the improved condition of these places, but have seen something of these improvements. Cannot a city be made, approximately, as healthy as a gaol? Cannot some portion, at least, of the improved health found in these places be assured to honest men? Fresh air, pure water, and wholesome food work sanitary wonders in hospitals and in gaols,—why not in cities and in towns? I have long since learned that it is far safer to have no sanitary works in a town than to have cesspools and sewers full of fermenting deposit. I have also learned that, in most cases, excessive disease is more due to foul air within the dwellings, and to the degraded habits of men, than to climate or to seasons. The causes of excess of sickness and mortality are within the dwelling—let it be tent, hut, room, house, or palace—rather than without. An atmosphere foul and offensive, but unconfined, may be breathed with comparative impunity, when a confined atmosphere will produce sickness and premature death. Nature and health require full freedom and endless motion. Sunshine, fresh air, and good water are the great requisites to health; overcrowding, tainted water, and hermetically sealed cesspools, are most to be dreaded.

We may notice some of the towns in England in which cesspools have been abolished, or in which a complete system of sewers and house-drains has been carried out; we do not care to parade a reduced death-rate as the result of such works, because many causes besides sewerage affect health; but we are assured that in all cases where such works have been wisely carried out, and are properly attended to, there is vastly increased physical comfort, perceptible moral improvement, and a reduced death-rate.

Berwick-upon-Tweed.—This old town has been sewered and drained, and to a large extent, cesspools have been abolished. During a late extraordinarily dry season the waterworks ran short of water; but since the change in the weather, water has been in abundance, and sewers, drains, and water-supply go on satisfactorily.

Birmingham.—The town council of this important borough have, by resolution, determined to complete the main sewers, to channel unformed roads and streets, to cause courts and yards to be paved, and to enforce and regulate house and yard drainage. 100,000*l.* are required, and voted, to complete public sewers and outlet works. Within the town, portions of the rivers' beds are to be deepened, and intercepting lines of sewers, with storm-water overflows, are to be made. A new Improvement Act is to be obtained, to enable the local authorities to devise and execute sanitary works generally, as also to regulate new streets, new buildings, and to prevent any street or court arrangements which may impede ventilation.

Brighton.—Reports and estimates have been made for systems of sewerage for this important town. The town council are seeking to obtain a new Improvement Bill this session, so that the public may hope to find the entire sea frontage freed from sewage. Half measures will only add to existing evils. The town council, "by resolution," have adopted the Local Government Act (Public Health Act).

Buxton, Derbyshire.—A local board has recently been formed in this important sanitarium; E. W. Wilmot, esq., is chairman, and supported by his grace the Duke of Devonshire. Important extensions and improvements are about to be made: railways are in progress which will bring the town into connection with Manchester, and Lancashire generally, on one side, and with the Midland lines and branches on the other side. Large areas of land are laid out on the most liberal scale for building purposes: new streets are formed, ornamental grounds are laid out and planted, and moderate prices are asked for building sites. The local board are working in earnest: roads are being repaired and footwalks formed: seats are placed at convenient intervals, and the celebrated baths are undergoing alterations, enlargements, and repairs: plans and estimates have been obtained for a complete system of public sewers: the contracts have been let on favourable terms, and the works are to be completed in the streets by May next. Last summer Buxton was full to overflowing: in a few years the town will, no doubt, be much increased, and the duke will have the pleasure of seeing a thriving community, and, at the same time, will be adding considerably to his rent-roll. We may expect to see Buxton become a place of villa residences,—fashionable all the year round.

Blackburn.—The sewage question remains far from settled in Lancashire: the rivers and streams of the manufacturing portion of this county are little better than main sewers from their sources to their estuaries. Print-works, dye-works, cotton factories, gas-works, chemical works, bleach-works, foundries, and many other manufacturing works using water, abuse these streams without let or hindrance. The waters are fouled, and boiled, and pumped, and puddled, until they are the colour of ink and the consistency of pea-soup. Town-sewers and road-drains have direct communication, and, on the banks, ashes and rubbish of all sorts are tipped at will. Each man owning any portion of the stream claims "to do what he likes with his own." The loudest bawler for local self-government will not deny that the streams and rivers of Lancashire are a prime source of wealth to this vast community, and yet, for lack of a wholesome conservative authority to protect, regulate, and repair, there is great danger of realizing the fable of the goose and the golden egg.

Bridgenorth. — At this out-of-the-way seat of antiquity sanitary works have been carried out—sewerage and drainage and public water supply. Water is pumped from a well near the river Severn, but the demand has outrun existing means of supply. A new engine and pumps are to be erected, and water is to be drawn direct from the river Severn, because the water is softer and purer. There is some local taint of common salt in the existing well, sufficient to act injuriously in use. A sum of 5,000*l.* is to be borrowed, to repay sums taken up at large interest, and to execute the necessary works.

Carlisle.—Complete works of sewerage were carried out in this city, and have been in use several years. Although the district is flat, and the outlet sewer and low parts of the city are liable to be flooded, the works answer their intended purpose, and every sewer and drain can be flushed out and preserved clean. The outlet sewer is upwards of a mile in length, having a fall of one in seven hundred. Land-floods rise 20 feet vertical above the invert. There are flood-valves and overflows, so as to relieve the low portions of the city. Mr. McDougal has arranged with the corporation for a use of the sewage, and with the agent of his Grace the Duke of Devonshire, for land on which to pump the sewage. There is no doubt as to the results proving beneficial.

Cardiff.—Extensive dock works are in progress near Cardiff; public sewers were commenced, but have not been completed. The sewers are large, and have comparatively flat inverts: several men are constantly employed within them to remove sediment and refuse. A new cattle-market and slaughterhouses have been established at Canton, near Cardiff, under the powers of a private Act of Parliament.

Lea Hurst, Derbyshire.—Miss Nightingale and her friends have recently erected schools at this place, which deserve especial notice. The schools are on the most approved plan, and can accommodate about two hundred children. In a separate building there are baths and lavatories, with the most complete sanitary appliances. The girls will be taught washing, ironing, and other home work, and each boy and girl will be encouraged to exercise personal ablution at short intervals. The fittings are by Messrs. Lambert, of London, and give satisfaction. These schools, with their baths, lavatories, and sanitary arrangements, will no doubt serve as examples to others, and lead to general improvement. No expense has been spared in this case.

Liverpool.—Liverpool is not at ease with her waterworks: the supply is found to be deficient. Additional parliamentary powers are sought, to make new reservoirs to supply excessive water compensation. The main sewers have never been completed: there are outlets into dock basins, and there are large areas of land in the immediate suburbs in sadly neglected condition. Some of the out townships have obtained sanitary powers, and have executed sewerage works; but there are large and important areas covered with houses in which there are no public sewers. But if houses have drains, they also have cesspools. In Liverpool proper there are some thousands of cesspits, which have to be emptied over the surfaces of the yards, courts, and streets, causing fearful nuisances for the time, as any one may verify who will make a midnight inspection.

Manchester.—The waterworks in Manchester have not been completed. The sites of the reservoir embankments have proved unsound, and, consequently, water cannot be stored as was expected. The corporation are, in Parliament this session, to obtain powers to purchase certain water compensations, and for other matters. Manchester, like Liverpool, is a city of cesspools: they are emptied at an annual charge of about 17,000*l.*, but the sale of the manure brings back about half this amount, so that the cesspools cost near 8,000*l.* per annum, plus the extra deaths caused, and excessive sickness.*

HEREFORD CITY IMPROVEMENTS.

THE works have been commenced here of the new general markets, for poultry, butter, butcher's meat, vegetables, and other miscellaneous articles, comprising also new warehouses for hops and wool, and a large room to the Guildhall for public city meetings. The market will be upwards of 200 feet long, and is to have a roof formed with curved and enriched wrought-iron principals, with skylight down the centre of each division.

Mr. John Clayton is the architect, and Messrs Beavan & Bowers, of Hereford, are the contractors. The amount of contract is 4,650*l.*, including value of the old materials. The following is a list of the tenders delivered:—

Welsh	£5,116
Beavan & Davies	4,698
Beavan & Bigglestone	4,620
Niblett, Gloucester	4,587
Evans, Brothers, London	4,495
Beavan & Bowers (accepted)	4,341

SOUTH KENSINGTON MUSEUM. — In Easter week the visitors were, on free days, 17,772; evenings, 10,336; total, 28,108.

* To be continued.

THE MONTHLY RETURNS OF THE METROPOLITAN DISTRICT SURVEYORS.

THE superintending architect of the Board of Works has published his annual report on the examination of the monthly returns by district surveyors. He shows that the fees received in twelve districts vary from 57*l.* to 196*l.*: in nine districts they are from 207*l.* to 276*l.*: in eleven districts they are from 310*l.* to 399*l.*: in five districts they do not exceed 442*l.*: in eight districts they reach from 500*l.* to 600*l.*; and in ten districts the fees vary from 647*l.* to 1,079*l.* The total of these fees is 22,385*l.*, received in respect of 15,558 works, of which upwards of two-thirds have been commenced during the year. He says:—"The expenses of district offices amount to 4,902*l.*, being a little in excess of those of the previous year. The fees remaining due for all arrears amount to 12,276*l.*, and the sums abated and lost show a total of 1,755*l.* In former reports I have remarked that this state of matters is not satisfactory, as it indicates a large amount of unremunerated supervision; but, as those most interested have not apparently found a remedy, I can only repeat that the present result differs not much from previous periods."

List of Totals of Fees received by the Surveyors, arranged according to value.

Districts.	Gross Fees received.	Office Expenses.	Net Revenue.
	£. s. d.	£. s. d.	£. s. d.
Tower Liberty	57 6 0	22 0 0	35 6 0
Putney and Roehampton	62 11 3	12 0 0	50 11 3
Rotherhithe and Hatcham, &c.	93 16 3	68 0 0	25 16 3
Stoke Newington	95 2 0	19 14 0	75 8 0
Fulham	117 3 9	15 10 0	101 13 9
Streatham and Brixton	125 6 9	17 10 0	107 16 9
St. George-in-the-East and St. Botolph	160 7 3	50 0 0	110 7 3
Greenwich	168 17 0	95 0 0	73 17 0
St. George, Hanover-square (North)	171 10 3	65 0 0	106 10 3
St. Giles and St. George, Bloomsbury	182 11 9	35 0 0	147 11 9
Limehouse, &c.	187 11 9	21 0 0	166 11 9
Woolwich	196 15 0	100 16 1	95 18 11
Clapham and part of Battersea	207 0 6	52 6 0	154 14 6
St. Martin and St. Anne, Soho	210 12 0	12 0 0	198 12 0
Hammersmith	239 4 6	134 2 9	105 1 9
Whitechapel	241 19 6	47 12 0	194 7 6
Chelsea	259 8 9	85 0 0	174 8 9
Wandsworth and Tooting	264 11 0	64 0 0	200 11 0
Hampstead	271 4 9	160 18 0	110 6 9
Bromley	276 0 9	82 19 6	193 1 3
St. James, Westminster	276 2 0	64 0 0	212 2 0
Southern Division of City	310 7 6	No return.	310 7 6
Camberwell	332 16 0	230 0 0	102 16 0
St. Margaret and St. John, Westminster	348 10 9	36 0 0	312 10 9
Spitalfields, &c.	348 15 0	39 0 0	309 15 0
Penge and Lower Norwood (part Lambeth)	349 6 3	51 10 6	297 15 9
North St. Marylebone	364 2 0	53 8 2	310 13 10
Holborn and East Strand	371 2 1½	144 12 10	226 9 3½
Plumstead and Eltham	371 15 0	84 0 0	287 15 0
Charlton, Lee, and Kidbrooke	380 19 3	37 0 0	343 19 3
Northern Division of City	383 2 9	115 0 0	268 2 9
Deptford	398 17 0	100 0 0	298 17 0
Western Division of City	410 12 0	120 0 0	290 12 0
Clerkenwell	432 4 6	48 0 0	384 4 6
St. Luke, Old-street, &c.	438 17 1	60 0 0	378 17 1
Eastern Division of City	440 0 9	116 0 0	324 0 9
Southwark, &c.	442 4 3	50 0 0	392 4 3
Hackney	500 9 0	277 0 0	223 9 0
Mile-end Old Town	507 6 6	90 0 0	417 6 6
Bermondsey, &c.	569 13 9	95 0 0	414 13 9
Bethnal-green	518 2 0	95 14 0	422 8 0
Belgrave and Pimlico	534 5 6	85 0 0	449 5 6
South Kensington	553 19 0	122 4 0	431 15 0
South St. Marylebone	598 2 3	150 0 0	448 2 3
East Islington	599 8 1	142 0 0	457 8 1
Lambeth, South Division, &c.	647 2 1	148 10 0	498 12 1
Lewisham	652 11 0	165 0 0	487 11 0
North Kensington	676 9 0	204 15 6	471 13 6
West Islington	705 14 9	81 14 8	624 0 1
Bow and Poplar	792 14 3	101 1 10	691 12 5
South Islington	891 13 3	225 0 0	576 13 3
Shoreditch and Norton Folgate	813 18 7	172 0 0	641 18 7
St. Pancras	944 7 6	No return.	944 7 6
Newington, Central Lambeth, and Battersea	960 18 0	78 0 0	882 18 0
Paddington	1,079 19 9	160 0 0	919 19 9
	£22,385 9 2½	£4,901 19 10	£17,483 9 4½

THE ARCHITECTURAL ASSOCIATION.

THE ordinary meeting of this society was held at the rooms in Conduit-street on Friday evening, the 13th; Mr. T. Roger Smith, vice-president, in the chair.

The Chairman, in introducing the subject of discussion for the evening "Modernism in Art," a paper on which had been read by Mr. Hayward, at the last meeting of the Society, said that the paper might be more correctly styled one on the truthful expression of architecture at the present day, inasmuch as the writer, avoiding the excesses and distortions, had looked only at the wants and requirements, of modern times. A person who now sets about to design had at once peculiar advantages and especial disadvantages. He had the disadvantage of different styles being ever before him, the productions of former times, which, by presenting an inducement to copy, tended to destroy originality. He had the advantage of being able to judge by the experience of past ages, and enlarge his ideas therefrom. A new spirit had undoubtedly crept into art, literature, and architecture, which he would term the Romantic. He believed that Goethe, or, perhaps, more certainly, Scott, had introduced it into literature, and the ecclesiologists into architecture. The result of the constant struggle between the several schools was that features of different styles were being combined, out of which we would form one of our own, a style singularly beautiful and harmonious. Gothic would probably be the basis, but we would draw from Continental Gothic, Italian, and even Grecian. New materials were at command; and the progress, though slow, would, however, encourage us to expect a modern style, such as would correspond with the requirements of our day.

Mr. Druce remarked that the idea was apparently in general forgotten that the architects of each style worked upon that one which was modern to them. Each of us in our designs should study the bent of his mind, and, adopting that style to which he had a peculiar leaning, adhere to it: by this means he would be more likely to attain to eminence than if he worked from several styles. Painters set the profession an example in this, for the most successful of them, adopting the principles of a particular school, rigidly followed them throughout; and some architects had, by working out the geometric, for instance, attained to more success than they could have arrived at had they taken pieces from all of them indiscriminately. The men of the nineteenth century should recollect that the style which they were introducing into buildings would impress the writers of a future day in the same way as the edifices of past ages had worked upon the imagination of those whose writings charmed us, and should be influenced accordingly to design such structures as would delight a coming age. But instead thereof we had fallen into distortions and affectations which tended to retard the progress of art; for the ignorant and the prejudiced, pointing out as models the buildings which bore this impress, founded thereon arguments by which to depreciate modern architecture, though the truth was that the profession had long ceased to recognize such deformities. The approximation of the present period to a style of its own was to be seen in a plain bold building, such as are now put up, with natural foliage, and pointed and Gothic arch used indiscriminately, and Classic details closely resembling the Early Renaissance.

Mr. Johnson said that he almost despaired of a style peculiar to the present time arising in England whilst there were so many previous ones from which to copy, and that much could not be accomplished of an original character, as long as the battle was hotly carried on about the merits of older styles. A compound of English and of foreign Gothic with an absence of expensive moulding seemed most adapted to modern times, and afforded opportunities for colouring, the introduction of which into buildings he thought of much importance.

Mr. Herring remarked, that a style which would be likely to prove successful at the present time must be of a utilitarian and naturalistic character. All previous ones were applicable to the buildings of their own times, but inapplicable now. A quantity of ornament was at the present day unsuitable; but if, getting rid of superfluity, we adopted such natural decoration as would catch the eye and be suited to the materials at our disposal, we should accomplish something. Iron and glass, for instance, have lately come into use, and are procurable at a cheap rate. If we adhered too rigidly to the styles of older times, we must lay aside such suitable materials in designing buildings. In the introduction of ornamentation we should look to the purpose for which the structure was intended, nor should the nature of our materials discourage us from attempting decoration; as even slating could by the judicious intermixture of slates of a red and of a blue hue be arranged to produce effect. Iron had not as yet been used to advantage in construction, so far as decoration was concerned; for, instead of being shown as the main material from which the building was raised, it was concealed from sight, and covered over with wooden pilasters. Thereby Nature was set at nought who delighted in showing the means whereby she effected any result. He thought that the only sense in which a style peculiar to the nineteenth century would be attainable was to use everything in its proper place, and with its proper decoration.

Mr. Lewis observed, in opposition to Mr. Herring's remarks on the manner in which Nature carried out construction, that she delighted in concealing from the eye the materials and the way whereby she effected her operations.

The Chairman remarked, that Gothic had in England the advantage over every other style, as it alone had grown in this country to perfection: we had outgrown the others which had been introduced, but this one had taken root and become indigenous: it had, moreover, shown an aptitude in drawing to its aid foreign elements, and incorporating them with its system. With regard to the introduction of modern materials into architecture, he might be allowed to adduce, even at the risk of discussion, the utility of Portland cement as a surface to cover over brickwork in the London climate. When sensibly applied, it reflected more light than even white bricks,—a point worthy of consideration in narrow streets: it prevented damp from penetrating the otherwise porous wall, and it avoided the expense and trouble of pointing, which the brickwork would otherwise require. There was, however, a serious drawback, that it encouraged bad brick to be inserted in buildings.

Mr. Druce objected to cement being thus introduced, as the natural light seemed to have no effect upon it. Wherever stone broke and varied the rays of light, there was a dreariness and monotony of surface about the former; and the sun never seemed to catch it, as it did other materials.

Mr. Herring thought that a good brick front would last much longer without pointing than a cement front would without colouring. Colouring must be put on in London within two years, and painting every three years; whereas pointing would not be necessary for at least ten years.

Mr. Johnson expressed a hope that the success of the discussion of the evening would encourage the Society to set apart separate nights for this purpose, on which particular papers, such as the committee should select, would be examined: perhaps a summary of the essay would be read in the outset and serve as a starting point.

The proceedings then terminated. At the next meeting Mr. Norton will read a paper on "Mediæval Sculpture."

DRINKING FOUNTAIN MOVEMENT. — The new drinking-fountain, opposite the Eagle Hotel, City-road, Winchester, is approaching completion. The architect is Mr. Coles, of that city.

SCULPTURE AND GOTHIC ARCHITECTURE.

In Mr. Bell's lecture on architecture and sculpture, delivered on the 28th of March at the Architectural Museum, and since printed in your columns, that gentleman pronounces the opinion that Gothic architecture is not in harmony with the highest class of painting and sculpture! I had hoped to see before this some authoritative reply to so injurious a statement,—a statement or opinion made without a shadow of argument or proof in its support. This being my view of the case, whilst more powerful advocates are silent, I feel bound to endeavour to call attention to the subject.

Mr. Bell, when he arrives at the province of Gothic architecture, does not find anything to indicate the application of the highest art of sculpture to that style in the works of the past, and, what is still more important, if his view is correct, does not think that any advance in the style will afford any more favourable result. He starts with the question, "Is Gothic architecture in harmony with the highest class of painting and sculpture?" and then, confining himself to some very general assertions in favour of Greek, Roman, and Italian architecture, the sum of his answer amounts to this;—that Gothic sculpture and painting have been and will be (in his own terms) inferior to that of the other styles, archaic and unnatural, quaint, cramped, and conventional.

Obviously it would be desirable to have it defined for us what is the highest style of art in painting and sculpture; probably time did not permit Mr. Bell to do this. There might be a very wide difference in such a definition from different quarters, and, therefore, in connection with the opinion pronounced by the lecturer, his definition would have been valuable.

The fallacy of the conclusion at which he arrives is evident, if we compare with the examples which he cites of buildings in his favourite styles any fair representative and well-known example of the Gothic. It was a deficiency in the lecture, perhaps unavoidable, that no example of Gothic architecture was described. Only two particular instances of the mode of application of sculpture were given. The Roman "Lady Bountiful," it appears, can show no subject "where sculpture has taken a greater part than in Trajan's column," and yet this design "is deficient in clearness and mental effect," and, he tells us, cannot be distinguished at all by the naked eye except just at the base of the shaft, nor is it an example to be followed. Rather unfavourable this for the greatest example of Roman architecture and sculpture in union. The other instance of the lecturer is from the Grecian, nor has he overestimated its value. The Parthenon, "a host in itself," he has so well described that we fully perceive the extent to which it is indebted to sculpture and the arrangements which the architects made for their brother artist; if, indeed, it be not the fact, as some say, that the sculptor designed the building, and, therefore, controlled the whole; which would make it probable, at least, that sculpture had a very free choice of her ground in this instance. The chosen arrangement placed *one* colossal and magnificent statue in the most important position within the temple, with, *perhaps*, other attendant statues of smaller size (the whole internal available space, divided into two unequal apartments, was only about 160 feet by 65). At either end, externally, a not very convenient form of frame in the tympanum was filled with colossal sculpture: in the external architecture, *framed* between the trigliphs, the metopes were filled with numerous subjects in the whole circuit of the building; and, within the peristyle, a narrow band of sculpture, confined between the mouldings of the entablature of the cella, completed the work allotted to this art. I draw attention to the fact that the sculpture was actually confined, and the unbounded profusion of which Mr. Bell boasts is not to be found in the example of his own selection. If this had been its characteristic, it never would have attained the celebrity and homage which its real merits command. Profusion of ornament was never a characteristic of Grecian art. Having observed the extent and the mode of the application of sculpture in this celebrated building, let us turn to our own country; and who shall be found with hardihood sufficient to deny that in our cathedrals, and parish and abbey churches, we have buildings whose name is legion, affording in any single example far more space and opportunity for the introduction of sculpture than the Greek masters obtained in their most celebrated and favoured example. Out of our abundance we select for consideration Westminster Abbey. We are all so familiar with it, that the comparison I have proposed is readily understood. Certainly, in latter times, there has been some belief in a "Lady Bountiful" here: her later guests would furnish, *in number* at least, all the temples and groves of Athens; but was ever hospitality more monstrously abused? Let those imagine who can its noble walls as originally rich with every appropriate form of design, its stones teeming with sculpture, combining its simplest forms with most ingenious elaborations and subtlest effects, cleared of the fearful barbarities with which the followers of Italian art (the men whom we are asked to regard as our masters) have desecrated them. Let them think of the pristine beauty and awe-inspiring effect of the noble array of monumental sculpture, the heroes and saints, kings, statesmen, and churchmen, with forms wanting in no accessory of marbles and precious metals, and shadowed by canopies devised to receive every form of grace which sculpture could conceive or art enhance, every attribute which mere cost could furnish, abundant and free to the artist's use, every effort of the most unwearied and patient labour lavished without stint. Let them imagine all this, and think of the dignity of the space, and the army of hands and minds employed to fill it, and then say where shall be found a more favourable opportunity, or a more gloriously successful instance of the union of the highest art than is presented in a true picture of the now obscured glories of this wonderful pile. In this and in a hundred other instances, daily within the reach of English artists, who shall venture to separate Gothic architecture from the sculptor's art?

There is yet another view to be taken of the subject. If Italian or Classic art (it is difficult to name it) be so much more favourable to sculpture than our native style, as Mr. Bell would have us think, how is it that its followers are now so justly lamenting the small measure of its accomplishments? Surely opportunities have not been wanting, not to mention important buildings of Italian style in our own day, and merely alluding to one of the last century, Somerset House, where, certainly, if ever invited, sculpture has not obeyed the call,—let us pass St. Paul's, architecturally alone one of the noblest works ever executed; but where is the sculptor's art, and where the painter's? What has the "Lady Bountiful" done here; why such cold hospitality? Strange that whatever there has been of Italian art has sought the Gothic shrine!

For myself, I blame not Italian art for deficiencies for which we ourselves as individuals, and as a people, are answerable. When sculptors study to produce what they really believe in, and when the people sympathize with the beliefs of the sculptors, we shall not want in the highest art, which assuredly no amount of repetition of Fames and Victorys, of Neptunes and Tritons—in which no one believes, and which few care to understand—will ever produce.

Gordon M. Hills.

LONDON AND MIDDLESEX ARCHÆOLOGICAL SOCIETY.

The meeting was held in the Temple, as we mentioned last week would be the case, and various papers were read, including one by the Rev. T. Hugo, on the Domesday Book, to see which a visit was afterwards paid. Mr. Hugo said,—"The sources from which my information is principally derived are, besides some considerable knowledge of the record itself, the works of Bishop Kennett, Sir Harris Nicholas, and Sir Henry Ellis, the last of whom, in his most excellent introduction to Domesday, has presented us with a vast amount of information, derived from a study of many years of the precious original, and whose words I shall use on several occasions, from a consciousness that no better could be employed. Domesday was commenced about the year 1084, and was completed in 1086. It was formed by a transcript or abstract of the breviates, which were in the first place compiled from local information in the different counties, and subsequently forwarded by the justiciaries to Winchester, where they were copied, rather, as it would appear, in a more contracted form than the returns actually furnished, and placed in a consecutive series. The justiciaries or commissioners had been appointed with full powers to collect information. Those for the Midland counties were—Remigius, Bishop of Lincoln; Walter Giffard, Earl of Buckingham; Henry de Ferers, and Adam, the brother of Eudo Dapifer. Before I enter into the mode by which these commissioners obtained the matter of their returns, a word may be necessary respecting the name of the record itself. It has at various times borne various appellations, as 'Liber de Wintoniâ,' 'Rotulus Wintoniæ,' and 'Liber Regis.' Its English name of 'Domesday' has been variously interpreted. By some it has been held to allude to the day of doom, from the minuteness and unsparing nature of its details,—'Quia nulli parcit sicut nec magnus dies Judicii;' while by others it has been said to derive its name from the fact that it was deposited in the king's treasury in the church of Winchester or Westminster, and in a particular place in one of those churches called 'Domus Dei.' It was greatly valued and kept under three locks and keys in the custody of the auditor, chamberlain, and deputy-chamberlain of the Exchequer. Soon after its completion it was removed to Westminster, was, in 1696, placed in the Chapter-house, and, down to a very recent period, remained there, till it has found a better and a safer place of deposit in the new Record-house attached to the Rolls Chapel."

In the Temple Church Mr. E. Richardson, sculptor, pointed out the few remaining examples of Early English sculpture in the choir and "Round," viz., the heads of Henry III. and his queen, gilt, over the great east window, quite hidden. Two Saracenic and two Christian heads, *vis à vis*, at the springing of mouldings high up between the two churches. They had received glass beads in the eyes and colour. He alluded with regret to the loss of all the original grotesque heads in the spandrils of the "Round," removed during the repairs of 1827, and the very inferior substitutes for them, executed by a quarryman, the originals being used up in the builder's yard for cart-wheel crushers. To show that the great restoration of 1842-3 was not faultless, he cited the removal of the effigies into a damp shed in Hare-court, for the six winter months of 1841, where they received much injury; and the re-interment of a beautiful incised Purbeck marble cross memorial, which, till Elizabeth's reign, adorned the pavement of the church.

"CHRIST IN THE TEMPLE."

Those who are interested in the career of Mr. Holman Hunt, the painter of "The Light of the World," have known that he has been engaged for some years past on a picture of that incident in the life of the Saviour wherein Mary and Joseph, seeking him, found him disputing with the doctors in the Temple,—"and when they saw him, they were amazed." This is now completed, and is exhibited in what is known as the German Gallery, New Bond-street. It seems to us to be matter for regret that it was not sent to the Royal Academy Exhibition, as well for the maintenance of the reputation of the British School of Art, as for the spread of the painter's own. Fear, however, of a bad light, the neighbourhood of damaging colours, or the regulations as to frame which would have prevented what the artist has considered it needed in this respect, may have prevented that step.

A picture like this, which, comparatively small though it be, has been thought over for years, demands at the hands of those who would criticise it a corresponding amount of consideration. Having seen it but once, hastily, on a "private view day," we restrict ourselves at this moment to the expression of an opinion which, indeed, may be deduced from what we have already said, that it is a work of very remarkable merit and great interest. The head of the third sitting doctor, the child, the beggar at the gate, the colour of the Saviour's robe, and the imitative skill shown in the painting of the marble floor, are the points which spectators will most readily admire, while the size and coarseness of the Saviour's feet and legs are the blot which will be to them the most obvious.

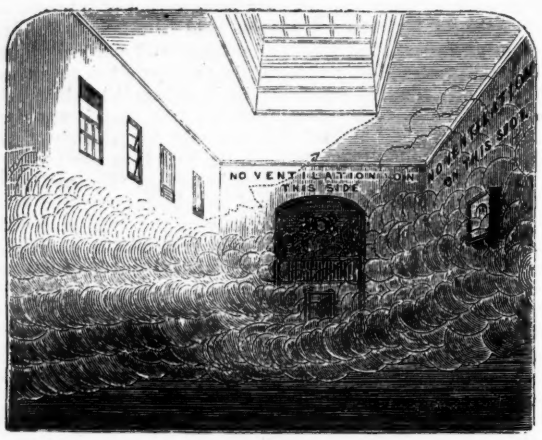
The course which, in lieu of simply providing pictures for the market, Mr. Hunt is taking,—devoting himself to produce the best work in his power, without reference to the time occupied, the travel and study necessary, or the probably small results in a pecuniary point of view,—claims our admiration and applause.

VENTILATION OF THE METROPOLITAN POLICE-COURTS.

BOW-STREET OFFICE.

An old proverb says that "the shoemaker's wife often goes the worst shod;" and this will apply as regards sanitary matters: those who make the laws and others who administer them are often placed in the position of the shoemaker's wife.

In the police courts sanitary laws are enforced, and perhaps there are not many public establishments in which so little provision is made for the



The Condition of Bow-street Police Court made visible.

preservation of the health of those who are required to attend them. Let us, for instance, look at the old police-court of Bow-street—which is apparently little better than it was in those days when Sir Richard Birnie was often wrathful with the representatives of the public press, and in other ways allowed temper to exceed the bounds of discretion.* The metropolitan magistrates are now very different from those of Sir Richard's days, and are distinguished generally for their sound judgment (bating always their decisions on building matters), patience, and kindly feeling to the unfortunate and miserable. Such men are valuable, and, with those who are engaged with them in carrying out important functions, should not be exposed unnecessarily to danger.

In winter the sanitary condition of Bow-street is bad, but in the heat of summer it is perfectly abominable. To those who have not visited this court, which is so generally known throughout the whole country, it may be necessary to mention that the entrance is not wider nor higher than the ordinary street-doors of the neighbourhood: very often round the entrance a crowd stops a portion of the small quantity of air which would pass that way. Inside the long passage which leads to clerks' and other offices are seats, and these, as well as the standing-place, are generally thronged by those who are called to attend cases or who have friends in trouble. Here may at times be seen congregated the very dregs of a great city, and a bad sight it is. From one part of this passage leads a room in which the more select of the waiters are accommodated; another is the chief clerk's office; further on is the entrance to the court, in which the magistrate sits; a little to one side are the prisoners and those in attendance upon them. In these passages and rooms there is actually no practical mode of ventilation, and the consequence is that the most poisonous gases are generated by the pent-up crowd clad in dirt. The very approaches of the court are thus, for want of a little right management, so loaded with bad gases that no one can pass through with impunity.

The door of the inner court is kept jealously barred, and on knocking for entrance a small square hole, which is provided for the purpose of making a reconnaissance, is opened, and then, according to circumstances, the bars of the doorway are withdrawn or not. Enter, and you will find that if the approaches to the court are bad, they are salubrious in comparison with this important London interior. We have looked into the dwellings of the poor and careless, and noticed other neglected places, but are bound to say that nothing much worse than the condition of the atmosphere of this court of justice comes to recollection. At the time of our last visit a case of terrible crime had caused the court to be crowded. In the court are four small windows on one side, near the roof, and on the three sides there are no windows; in the centre of the roof is an opening which serves for light and ventilation.

As we have remarked, the door of the court is kept carefully closed. There are two other doors, one leading from the room in which the prisoners are detained, and another from an apartment generally crowded. These doors are also kept almost constantly closed, nor are there any gratings or openings in the lower part of the court which would assist in passing the bad air through the opening in the roof. As the arrangement at present is, the temporary opening of the doors referred to serves simply to carry in portions of the heavy gas which loads the passages and rooms. The windows of the court have but little effect in clearing the room of the poisonous gas, which in such places is produced in large quantities. Carbonic acid gas is much more dense and heavy than the atmosphere: consequently, without proper arrangement for its escape at once when heated, it collects in dead corners, and near the floor. Every one knows of the "Grotto of the Dogs," in Italy, where carbonic acid gas, coming out of fissures, lies in layers near the ground, with the other and lighter air on the top, in the same manner as oil floats on water, so that a dog being near to the ground would die while a man could breathe.

The fumes of charcoal contain a large proportion of carbonic acid gas, and this causes the burning of charcoal to be so dangerous as it is in closely confined places. A case is related of a woman who was ironing in a confined room, and using a charcoal stove. As the charcoal burned the carbonic acid gas settled down towards the ground. Owing to the want of other air, the heavy gas accumulated higher and higher, until it reached the mouth of a little child, who grew giddy, and fell down almost lifeless. The mother stooped down to take up the child, and, inhaling the poisonous gas, became giddy, and fell also. Fortunately assistance soon came, the windows and doors were thrown open, or mother and child would have died.

The poisonous gases in the Bow-street police-court are easily to be felt; and if we had, as we may one day have, the power to see the air which destroys life when in sufficient strength, and injures health when even in a diluted form, it would be observed in the ill-ventilated parts in thick layers, which decrease in density in proportion as pure air is forced amongst it.

The sanitary arrangements of the present court are most insufficient. The magistrate who sits here many hours of each day, fulfilling an important and difficult duty, is subjected to both inconvenience and injury, and so are all who attend. Surely the continuance of such a fever nursery in a public office is not creditable, in the face of our sanitary knowledge. The court might, doubtless, be improved; but the whole is so faulty that the building requires to be entirely reconstructed.

* In some of the police-courts recently constructed the arrangements are better.

REFORM IN THE ROYAL ENGINEERS' DEPARTMENT.

THE Secretary at War, Mr. Sidney Herbert, has just issued an important paper, which we feel assured that many of our readers of some years' standing will peruse with a decided impression that it must be a leaf torn out of the *Builder's* pages. We would merely point to two of our leading articles, of date 26th July and 27th September, 1856, to go no farther, in order to refresh the memories of others on the subject. For these and other articles we met with no little obloquy at the time, but the Secretary at War's present despatch to the Royal Engineers' Department not only justifies all we have said, and shows that such defects as we pointed attention to actually exist in that department, but gives a well-grounded hope that the time has arrived for the realization of adequate remedial measures. Whether these measures will take the shape of a thorough architectural and engineering education of young military officers, or the establishment of a responsible and recognized department of civil architects and engineers, remains to be seen. We have already expressed our opinion on that subject, and need say no more as to it at present.

The following are a few separate passages from a long despatch in a similar strain addressed by Mr. Secretary Herbert to the Department of Royal Engineers, and signed "B. Hawes:"—

"There is reason to fear that there are engineer officers who consider the duty of designing beneath their notice, and who are too ready to place in the hands of subordinates duties which engineer officers in most other services in Europe perform unassisted, and which are really among the highest functions of the architect or engineer, be he military or civil."

"Mr. Herbert wishes that the designs for new works should, whenever it is practicable, be prepared by an engineer officer, whose name should be attached to the design. When it is necessary to employ a civil member of the Department, he also shall sign the plan, and have the full share of responsibility which attaches to the designer."

"When the proper plan and dimensions are arrived at, care and judgment are required in selecting the most suitable material, and applying it in the mode best calculated to attain solidity at as little cost as possible. It is often bad economy to build in too temporary a manner, but the converse is also true. It may be cheaper to build every ten years in wood than to sink a large sum in stone. The best materials should be provided where they are required, but it is quite proper to use inferior materials when they will answer the purpose as well."

"Engineer officers should endeavour to make the case their own, and do for the public service what they would do for themselves had they to find the funds."

"Mr. Secretary Herbert feels confident that many officers of engineers do give him the assistance he requires, and all can if they will only make the attempt."

HOLY TRINITY CHAPEL, KNIGHTSBRIDGE.

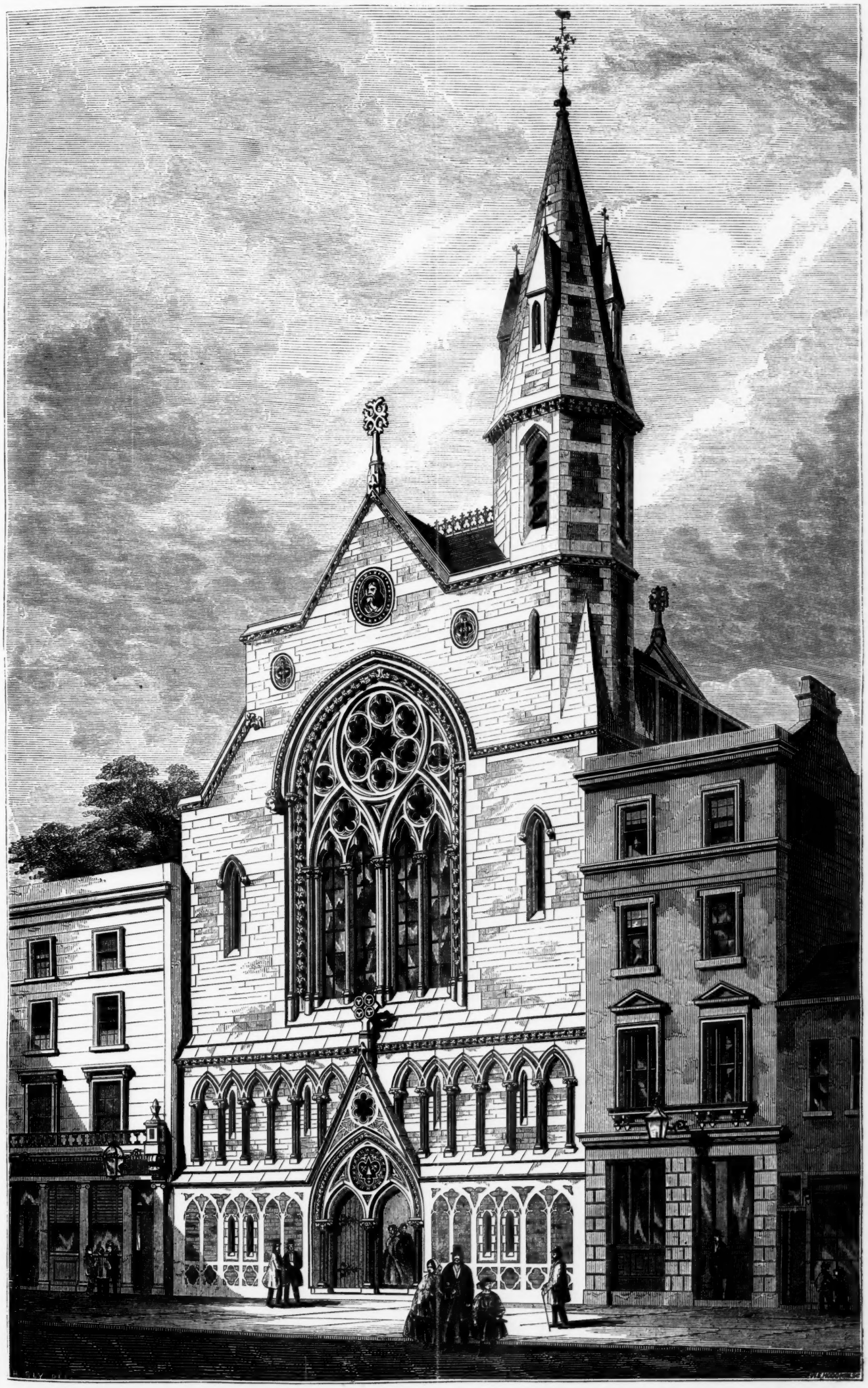
THIS chapel, formerly attached to a hospital belonging to the Dean and Chapter of Westminster, is about to be entirely rebuilt and enlarged, according to designs prepared by Mr. Raphael Brandon and Mr. Henry M. Eyton. The plan is a simple parallelogram, the internal dimensions being about 70 feet by 33 feet. The roof of the new chapel deserves attention, as being entirely new in its construction, introducing an entire range of clear-story lights on each side, to compensate for the want of lights in the side walls; the building being adjoined, on each side, by ordinary houses. These lights can be approached by external passages, so as to admit of their being opened, to afford ventilation, without having cords hanging down internally. The height of the chapel, from the floor to the ridge, will be 65 feet. The new chapel will afford accommodation for about 650 adults, and is contracted for by Messrs. Dove, Brothers, of Islington, at the sum of 3,250*l*. The present incumbent is Dr. John Wilson, Head-master of St. Peter's Grammar School.

The chapel is of ancient foundation, and was rebuilt in 1699. The structure which has been taken down was for the most part of that period, but the front had been extended in 1789. Many of our readers must have noticed the quaintly-inscribed stone slabs under the upper windows, one bearing the words, "Rebuilte by Nicho Birkhead, Gouldsmith, of London, Anno Dom. 1699;" and the other (the westernmost), "Capella Sanctæ Indiuiduæ Trinitatis."*

YORK MINSTER ORGAN.—The following appears to be an authentic statement of outlay connected with the restoration of this instrument, now completed:—

Messrs. Hill	£1,240	0	0
Messrs. Joy, for hydraulic engines...	178	0	0
For supply pipes from Water Works	69	3	0
Expenses at opening, Nov. 10, 1859	113	4	6
	£1,600	7	6

* A sketch of the front of the building will be found in Davis's "Memorials of the Hamlet of Knightsbridge."



HOLY TRINITY CHAPEL, KNIGHTSBRIDGE.—MR. R. BRANDON AND MR. H. M. EYTON, ARCHITECTS.

THE ARCHITECTURAL EXHIBITION.*

Resuming our notice of the Exhibition in Conduit-street, we come to the "Public Hall Building, recently erected at Maldon, Essex" (129), by Mr. T. Roger Smith. The drawing shows a structure of yellow brick, with white brick dressings, with window openings having semicircular heads, splayed cills, and shafts. The design partakes of a manner, in these features, which is too prevalent, namely, the repetition merely of short arch-headed windows; the effect of which is, in place of that from grouping, one of general heaviness. Perhaps the observer instinctively suspects darkness of rooms. Mr. Smith succeeds better in his competition designs, as well as in his "Stratton-Audley Park, in course of erection near Bicester, Oxfordshire," of which there are two views (256, 257), showing a stone-fronted Gothic mansion, with gables, mullioned windows, and a square tower with a wooden belfry-stage, and a slated roof capping.—Messrs. Banks & Barry's "Industrial Schools for the County of Middlesex," recently completed at Feltham (130), and illustrated in our pages some time ago, has defects similar in their nature to those of designs of the class of that first named in our notice; though they appear through another character of detail. Had the quantity of stone or other light-coloured material used as dressings with the red brick in the Feltham schools, been in less force here and greater force there, parts of the design intended to be prominent, and now dependent for the force solely on their bulk, would have operated in the effect as intended. The whole effect would have been taken up by the eye with greater satisfaction; would have followed from the principles which should regulate every work of design, especially one having many parts; and would have been pleasing rather than in some respects the reverse—from the lack of emphasis, and of due ordination and subordination of parts. The same architects also exhibit (131) a View of Schools proposed to be erected at Hallsville, for the Plaistow and Victoria Docks Mission, a plain Gothic building, with belfry and porch of coupled arches.—Some meritorious designs for schools are exhibited by Mr. John M. Hooker. No. 134 is the "National Schools, Marden, Kent," erected, with master's house, for 240 children, at a cost of 1,240*l.* This design, like the others, is Gothic. Red brick here is used, with thin bands of dark-coloured brick at regular distances, and duly subordinated; and roof principals appear externally, on the gables, in the place of bargeboards. The "Design for National Schools, Charlton, Kent" (136), shows a stone building in the "Decorated" Gothic manner, with gables and a bell-turret. The design for the "Abel Smith Memorial School, Hertford—selected in competition" (178), has yellow brick with bands of red, and is a good composition—the tower with spirelet only excepted, so far as resembling the distinctive character of the same feature of a church. Mr. Hooker also exhibits (135) "Parsonage House for the District of St. Andrew, Paddock-wood, Brenchley," similar in style and in merit.

It is difficult to make a fair comparison between the designs for schools which there are in the Exhibition—amounting to a considerable proportion of the drawings; for, materials, locality, and size involve wide distinctions, which are generally made apparent in the result. Satisfactory is it in point of art, that the result is so. Mr. Edwin Nash's "Penge School for Infants, now erecting" (150), and Mr. Colling's "New Schools erected at Haslington, near Crewe, Cheshire" (128), are good specimens of the plain red brick class; and Mr. John Norton's "School-House and Teacher's Residence, Stogursey, near Bridgewater" (158), is equally successful in Gothic detail and grouping, for a stone building of a more enriched character. The drawing last named is cleverly coloured, without the appearance of much labour.—Mr. F. Warren's "Freeman's School, Wellingborough, re-erected 1859" (162), has more variation of colour, but not a better result; and the list of buildings includes the "Monk Bretton Schools, Church and Master's Residence—cost 500*l.*," Gothic, Early "Decorated," of grey stone with white dressings (171), by Mr. J. G. Stapleton; and the "School at Weston-super-Mare" (176), of similar materials and style, but better in effect, by Mr. Hans Price. Also near the drawings mentioned, is a view (172), of the "Walsall Blue Coat and National Schools," by Mr. H. Cooper, a large group of buildings erected at a cost of 5,000*l.*; in the same style, but of red brick with dark-coloured bands, with stone dressings, gables with crosses and finials in ironwork, and a tower with a lantern stage and a slate covered spirelet.—Mr. E. W. Godwin's "Design for proposed National Schools, St. Philip's, Bristol" (152), is a three-story building, suitable for a town, and it is marked by considerable skill in the grouping and originality in the details. A basement of closely-set and plain, narrow openings, concealed in the flank by the enclosure wall; a principal story of two-light windows as subordinate in a continuous range of arches with enriched archivolts and parti-coloured voussoirs; a top story of square-headed windows under the eaves, and a gable of low pitch with peculiar finial, and a cusped window, circular, under an arch, together with the contrasted rough walling and dressed coins, are the principal features. A square tower, with plain stone pyramidal capping is at the side. The same architect exhibits a drawing (153) of "Portion of the New Works, Staverton Church, Devonshire," wherein the native marbles have been used in shafts to the new windows, which are of "Decorated" character, and the external walling of loose material has been covered with rough-cast,—a description of finish which it is well to note, is to be found of old date, more frequently than some archæologists may be aware of. He has also a cleverly designed elevation for a carriage manufactory (310). To the execution of this work, or that substituted, somes passages in professional experience are attached, if we may judge from the entry in the catalogue and the photograph (311).

In the arrangement of the drawings on the walls, that of grouping the works by the same author together, has been adopted (as the numbers we have given, have shown) to a considerable extent: and it might with advantage have been followed universally. It would, however, be a good plan in future exhibitions, to group the designs in classes according to the subject; or should that be not feasible, from the practice of some architects of sending their works of different classes in the same frame, there might be a division of the catalogue, secondary to that of the order of numbers, which would assist the study of the exhibition, and promote those educational results which we have so often adverted to as the best objects of an annual gathering of drawings. Indeed, it would be possible, by attention to the catalogue, and to the regulations for exhibitors, to make the Exhibition of immense service to the profession, as well as to the public. We are by no means complaining of what has been done since first we adverted to omissions and requirements. On the contrary, information of the most useful character is now supplied by exhibitors in response to the "regulations." The printing of the catalogue, however, might be further improved in points which are within the duty of an ordinary reader for the press. Authors' names, or explanatory matter, are sometimes arranged on the page, so that it is not immediately observed which number of a drawing is referred to. Also, architects might be asked to state cubical contents, and of each part of their design involving difference of work. Sections not being given, plans and the statements of total cost, are comparatively of little service for certain objects.

We have admitted that the grouping of subjects would, for various reasons, be useful only to a limited extent in chronicling the architectural progress of the year: it would, however, be of value sufficient to be worth the trouble, and would be the nucleus or precedent for such an exhibition as we hope ultimately to find in Conduit-street. We cannot supply the want ourselves in the time allotted us. We may, however, group together one or two of the drawings of churches designed, or lately erected. Mr. Dudley Male exhibits (137) "North Pickenham Church, Norfolk; as proposed to be rebuilt," a very ordinary "Decorated" structure of grey stone, with light stone dressings. Mr. G. Goldie has "Six Studies for the new Roman Catholic Church, recently completed at Lanark" (143), and "Six Sketches for Works in Progress" (144). The Lanark Church is Geometric "Decorated" in style, and has a prominent bell-gablet at the east end of the nave; whilst there is also a square pyramidal-capped tower at the west. The interior is most deserving attention; the piers have slender shafts attached on the face, to carry statues; the arches are chamfered for the ball-flower; and the baptistery, inclosed by a dwarf screen, is well treated. The dwarf screen, of masonry, to a chancel, is now generally adopted in place of the rood-screen; and we certainly think, with as much propriety in point of art,—art which should not adopt forms where there is no longer the use or the symbolical meaning,—as in the view of what is distinctive in the Protestant ritual. Of Mr. Goldie's "Works in progress," Ballymont Church, Mayo, is of that Geometric "Decorated" character, or that before the advent of tracery, which is in favour with an increasing number of church architects—not only for plain churches, but those which admit a considerable amount of decoration by colour and in furniture. The Priory Church, Bergholt, Suffolk, however, is Romanesque, with square tower. The church at Yarm, Yorkshire, is Early English, of red brick and stone, and has an apse, and a peculiar, but effective, slate-capped bell-turret at the side. The sketch of the interior of this church shows that the dwarf-screen, or inclosure, is found suitable even for the Roman Catholic ceremonial. The best of the designs is that of the church at Ipswich. It is of red brick and stone, with a *flèche* on the roof, marking the junction of the nave and chancel; and internally has stilted arches, and a timber roof, with the trusses coupled and boarded over, and ornamented with quatrefoils.—The building which is shown in No. 154, "Markham Square Congregational Chapel, Chelsea, now erecting" (154), by Mr. J. Tarring, was described in our last number. It is a cross church of Late "Decorated" character, with tower and spire, buttresses, and pinnacles. The design sadly wants crosses or something to terminate the gables; and generally it is one of those which "shunning faults" would only drive to "sleep." Works of this class now, indeed do want something of the often-spoken-of novelty. May we not hope for the result of mental effort, divest of the eccentricity and *bizarrerie*. Our Mediævalists have much to learn yet, to escape each horn of the dilemma on which they are apt to cast themselves. We take this opportunity to name (155) "Tingewick Rectory, near Buckingham," a Gothic, stone, mullioned, and gabled building, by the same architect. The "Mansions in Gore-road, corner of Prince Albert's-road, Kensington" (146), also by Mr. Tarring, with Italian details, are more pleasing in the drawing than in execution, probably, in the latter case, from the use of cement and the defects of some of the details,—as the trusses in the *cornicione*.

We were speaking, however, of churches; and near the drawings last named are two designs which will not fail to be contrasted, both having octagonal lanterns and pinnacles at the springing of the spire, but treated very differently. Of the two, the one, No. 157, "St. John's Church, Bedminster, Bristol," by Mr. J. Norton, and the other (173) a "Design for the proposed Rebuilding of St. John's Chapel, Bedford-row, on the old foundation," by Mr. Garling, we prefer the latter, because the octagon is made to serve the union of the tower and spire; whilst the former design has the octagon rising too high, or not high enough, for the tower pinnacles, and has the spire merely set on the octagon. In Mr. Garling's design, the finials, or spirelets of the pinnacles, and the spire, spring from the same level: whilst, in the other design, the cornices or mouldings do not range. Mr. Norton adopts gables to the bays of the side aisles: Mr. Garling has a different arrangement without buttresses, and has circular cusped window openings over the main windows of the aisle. A polygonal apse with tall windows, the tower flanking it, plays an important part in the effect.—"St. John's Church, Lamsford, Herts" (179), by Mr. D. Brandon, shown in a clever sketchily coloured view, groups well, and has some good features of detail: but it might pass for an old church; and, so long as that is by far the most prominent attribute of a building, we hold the design cannot be accepted as in every respect satisfactory, or, indeed, as at all the illustration of art architectural. In a like category we are compelled to include Mr. Burges's "Proposed Cathedral to be erected at Brisbane, South Australia," shown in photographs from the drawings: nay, this design seems to us to go further in a wrong road, being treated as though the use of windows were not to admit light. The proportion of aperture to enclosing arch is so small that the mouldings and other parts of the arch do not preserve their desired "semblance of use:" the elevations appear as if copied from an old manuscript; still there is much in the design which, could our objections be got rid of, would go to constitute a very suitable building for a locality where elaboration of detail would, from costliness or difficulty of execution, be out of place. The building has a square tower, with saddle-backed roof, placed at the south-west angle of the plan. The interior is by far the best portion of the design. There is a passage-way, all round, in the thickness of the

* See page 228, *ante*.

walls, at the level of the window sills of the aisles, and a similar way, guarded by balcony rails, to the clerestory. The rear-arches of the clerestory are coupled, the windows themselves being chiefly circular.

We have not named many of the drawings of old buildings, attention having been given chiefly to those designs which we have thought useful for some point or other of suggestion to new matter or new train of thought; but visitors to the gallery should not pass by Mr. F. R. Wilson's "Interior of the Church of Saints Peter and Paul, Brenckbourn Priory, Northumberland, as supposed to have been decorated in the olden time" (197). The shell of the building only is existing. The "Restoration of the Centre Panel of the ancient Retabulum of the High Altar at Westminster Abbey,—the Figures by H. S. Marks; the Architectural Portions and Decorations drawn by R. Edgar, under the direction of G. G. Scott, A.R.A." (198), will likewise be interesting in the antiquarian point of view—from which we are not disposed to exclude an appreciation of what is beautiful, and is also useful towards fresh combinations. How far our art has gone wrong by the way in which the polychromy of the Middle Ages has been revived, with sometimes excessive use of gold and inharmonious combinations of the primary colours, is a question suggesting itself from time to time, and which some day will have to be disposed of. Judging from the attention now given to church-furniture, however,—as in manufactured articles, and in the designs of architects of the Mediæval school,—the elaboration and the colour, and the demand, continue, albeit contrasted with severity in the forms of masonry, as also of roof-timbering, which has before been spoken of. We are not condemning use of colour, but only modes of its use.

We are not sure that Mr. Street's designs, to which remarks above might apply, do not, like several others on the walls, owe some effect to the cleverness of the drawing with pen, which could not be due to the architecture. Certainly the student cannot be too careful in judging of effect from drawing alone,—whether the drawing be in tinting artistic or so only in ink,—or even though the drawing be at first appearance discouraging. Of Mr. Street's drawings, the first on the list is the "Bird's-eye Prospect of the Church, Parsonage-house, and Schools, recently erected at Boyne-hill, near Maidenhead, with Design for the proposed Steeple" (220). This large group of buildings, however, externally is remarkable for the judicious use of the darker-toned materials, or the harmony of general effect made consistent with use of materials of different characters. The tower is detached, and is crowned with the low lucarned broach which Mr. Street uses frequently. St. Giles's Church, Oxford, now erecting by the same architect, shown in two views (221 and 223), belongs to the same style of Early "Decorated" as the work last mentioned. Here the lucarne openings are enriched with tabernacles. The plan, we spoke of in our last as remarkable for the narrowness of the aisles. It is also remarkable for a gathering-in of the eastern bay of the nave next the chancel. The tower is placed over the western extremity of the chancel, from which the transepts project, the north transept being appropriated as the organ-chamber. Distinctive character is given by the short massive nave-piers,—circular shafts with capitals and bases; and by the treatment of the wide rear-arches of the clerestory. There is a semi-circular apse; and the ceiling is waggon-headed, with a tie and king-post (slightly moulded and carved), without struts. The foliated ornament in capitals, and the reredos and other church furniture are tastefully designed, and, as we have said, skilfully drawn. Mr. Street's "Grammar School and Vicarage House at Bloxham, Oxon, recently erected," of which portions are shown under No. 222, are in the same style. The former building has a cloister in which the openings are effectively treated as a range of arches with the shafts coupled in the thickness of the wall; and the latter has some of the windows square-headed with shafts in place of mullions, and a wide-projecting sill on corbels or blocks.——"The Chapel, St. Mary's Cemetery, Kensall-green" (224), by Mr. S. J. Nichols, has a porch of which the front is formed by an arch carried on detached columns, and in the western end there is a novel combination of a large floriated cross with the window. ——Mr. E. W. Pugin's churches for Northampton and Cork, are the best works we have seen from his hand; and if carried out as shown, they will be very elaborate. The view, of the exterior, of the Northampton Church (291), shows a lofty building, "Decorated" in style, having a tower and spire joined in a cluster of pinnacles, and a polygonal apse with tall windows. The view, internal, of the church at Cork, of St. Peter and St. Paul (292), for which there are designs by other architects in the West Gallery, has a rich open-timbered roof with side spaces over the clerestory windows, groining in in a peculiar manner. The chancel and apse are very effective: though, as a chancel arch is omitted, there is not sufficient framework to the vista or picture which is presented.——Mr. W. Slater's "Church of St. John, Moggerhanger" (303 and 309), is one which resembles an old church. It has an apse, and a square tower, with slate-covered spire over the western portion of the chancel. A similar character pervades the interior of the church of St. George, Basseterre, St. Kitt's (306), erected from the same architect's designs, unless in the arrangement of the chancel, which in its plan advancing into the nave, and the use of the dwarf screen, reverts somewhat to the original type of the Church of San Clemente, at Rome. Mr. Slater also exhibits an interior (307), and an exterior view (308), of Sompting Church, as restored by the late R. C. Carpenter. The sheet, with fourteen Northamptonshire towers and spires from churches restored by Mr. Slater (305), at first conveys the impression that the restorations have been general, and have included the towers, which in some of the cases, we have reason to believe is not exactly the case.

We have not yet finished.

A WORKMAN'S WORDS TO WORKMEN.

AT Salford there is a Lodge of Operative Carpenters, and an attempt is made at mutual instruction. One of the members, Charles Barnett, a young carpenter, a member of the Trade Union, but who does not agree as to the way in which it is conducted, read a paper to his fellow-members not long ago, from which we make some extracts:—

The destiny in life of the skilled mechanic is much more influenced by his *second education*, that of his apprenticeship, than by his *first*, that of the school; and yet it is to the school that the importance is regarded as attaching, and we never hear of the other. But it is in this latter and most important part of our education that it is to be feared we, as a body, are deficient.

This may be a hard and unpalatable statement to many; but I would ask you, is our position such as becomes the followers of such a handicraft as ours? Are we held in that high estimation by our fellow-countrymen which the nature of our daily employment would warrant us to expect, or them to place us?

In a word, are we, as a body, art-workmen, or merely men getting through our work? If we answer from our own experience, we shall be compelled to say, however reluctantly, that, as a body, we fall far below that standard to which it is our bounden duty to aspire, and to which the public have a right to expect us to arrive.

And with whom does the fault rest? In answering this question, it may be I shall stand almost alone among you. But I most solemnly declare I believe it to be with *ourselves individually*.

It is to be feared that the remarks of one of the first architects of the day is too true when he says that it is possible 'to point to individual workmen, of an intelligence and of aspirations not inferior to those of the workmen of any other country, and perhaps of more indefatigable powers of application; but, as a body, I fear we must admit that our building artizans are far more eager to shorten their hours of labour than to improve their hours of leisure.'

It seems to me that we look too much to external power to raise us, instead of heartily receiving, and, each for himself, having a lively apprehension of, the truth that no application of external power alone can raise a man, or any body of men; that power must proceed from within.

The utmost that laws can do, whether enacted by an imperial legislature, municipal authority, or voluntary associations, is to remove *external obstacles* from our path: *progress in that path* must be the result of our own efforts. You know the old saying, 'That one man may lead a horse to the water, but a hundred cannot make him drink.' So it is in our own case: laws may *smooth* our path, but it is beyond their power to make us walk in it, save by our own will and effort.

If we wish our trade to occupy its proper position, and our handicraft men to be rightly esteemed, we must take care that each member is estimable.

This should be the great principle on which the education of the workshop should be founded. That the honour of the craft does not depend on the laws by which it is protected, but upon the intelligence, the skill, and the manly bearing of each individual craftsman. Let but these qualities be developed in our brethren, and then no laws could be made, either by Parliaments, by masters, or by ourselves, that could oppress us; and, simply because we take away the will to do it.

Intelligence, skill, and manly bearing are the levers which must raise us (if we are to be raised), as they have been the means which have raised every other profession that is high in public estimation.

Hitherto it is to be feared that we have depended too much, for our protection and progress, upon laws and regulations of the common body, instead of individual effort, mistaking, as it seems to me, the removal of obstacles for actual progress.

In what has been advanced, many of you may perhaps think that I have spoken severely; but is it true? And if there be any lack of that intelligence, skill, and manly bearing so necessary to render any body of men respectable and respected, what can we do towards developing in ourselves and training our younger brethren in the qualities upon which we lay so much stress?

The matter seems entirely in our own hands; and in our trade societies there is an apparatus admirably fitted for the purpose, and this adaptation to our wants will be found, not in changing the purpose for which our societies were intended, viz., mutual protection, but by adding to them the far higher object of so assisting in the training their numbers as to render each one self-protecting. Not only would I have our trade societies use their influence to protect us in our privileges, with reference to the masters, but also add to that *moral and intellectual training*.

It should be the care of the trade that every apprentice should have the means and opportunity placed before him of acquiring those habits of industrious and persevering application which are necessary to the attainment of a sound knowledge of his business in all its parts. He should have the means of associating with the older members of his craft, that by their example he may continually be incited to labour to acquire that skill in his craft which would enable him in his turn to become an honour to his trade and an example to others.

Our society should have, at least in every large town, its public room open and known to the world as ours. This should be the trade home of the young artisan. There should be class rooms in which should be taught, by members of our own body, every branch of a sound English and technical education. There should be rooms for reading and conversation, with convenience for lectures or public meetings of our body. There, also, we should have opportunity of being accompanied by our wives, our children, and sweethearts, to join us in our festivities.

Our society would thus be before the public: the objects which we sought would commend themselves to the approbation of the public; and in just such proportion as we attained the object in view, in just such proportion would the trade rise in public estimation.

Our society thus being brought openly before the public would be freed from the suspicion with which, however we may blink the fact, it is now regarded by so large a portion of our fellow countrymen; and then no longer should we see in public advertisements, 'No society man,' as a recommendation for the higher positions of our trade.

Being thus public we should be freed from the danger and temptation of using the society for other purposes than those its publicity avows.

No longer should we have large bodies of our fellow workmen standing aloof from us, but each would see that in joining his fellows he would best advance his own interests, and most effectually assist the progress of his fellows: not to belong to the society would soon come to be a mark of disgrace, not only by ourselves but the public generally, as it would be evidence that the man was deficient in those qualifications which would render him an honest and skilled workman. While thus acting in accordance with the liberal principles of the age, we should secure in a great measure the advantages of the old trade guilds, which, according to the time in which they were founded, admirably fulfilled the purposes for which they were instituted.

Thus kindly feeling and charity would be diffused amongst us. We should nurture men to whom hereafter we should have pardonable pride in referring as having made their first step with us.

To be united with us would be an honour,—to be separated from us a disgrace.

There is much good sense in these observations.

SERPENTINE WATER SUPPLY.

THE committee which suspended the works in progress for filtration and perpetual revolution of the identical element now contained in the basin, has come to the conclusion that the plan adopted by the late Government, and now so near completion, was in error, but they have left the question open as to the mode of treating the bottom, as to the source from which the fresh supply is to be derived, and as to the no less important consideration—who is to carry out the project?

It is suggested that a copious supply may be had *by gravitation*, from a spring accidentally tapped by the contractor of sewers, near the Great Western Railway Terminus; and that from a point only 300 yards distant from the repudiated filtering beds; and of this there seems to be little doubt, since the strong current which issues into the sewer at that point would fill a 4-inch bore. This water at present runs to waste, and might be much increased if such measures were taken as produced the enormous quantities in Orange-street, or in Duck Island.

The surface elevation in Spring-street (so called) is 80 feet, the source being 20 feet lower, and immediately over the clay stratum; and the level of the Serpentine being 50 feet above high-water mark, a fall of 10 feet would remain. So far the facts are proven, but the task remains, *how to win the fullest supply from the Paddington bed*, and how to conduct it to the site of the now abortive works.

Wasted funds, and the suppression of a contract for 17,000*l.*, drew forth some animadversion, and might have occasioned regrets. The works must be paid for, and the engineer's commission also; but any new project or altered plan can be carried out only upon the same provisions, whoever the engineer or contractor may be. The materials on the ground,—the filtering beds, and even the sculptured urns, need not be wholly lost; but the execution of the amended system ought to be entrusted to the most practised and approved of professional experts; and, in this unhappy case of all others, *detur digniori*.

If, as seems probable, the desired supply is attainable at the point indicated, a very large amount would be saved in conduit pipes from St. James's, as well as in mechanism to force the water a distance exceeding two miles; but of the sufficiency and expediency, the best judges must be those parties who have already exemplified their professional skill by drawing forth from untried repositories those fountains and streams which have stood the test of years and of searching investigation.

What portion of the works now unfinished may remain incomplete, or whatever the expenditure for a bootless object, is of little weight. To finish a bad design would only create further obstruction; therefore, the sooner the right one is commenced the better.

As to the condemned works, there can be little doubt but that they originated in a predilection of the late Chief Commissioner in favour of Mr. Hawkesley's ingenious scheme; and it is only right to correct here an inference formerly given in the *Builder*, "that the devastation of the flower borders was caused by some underling," by stating that the express order was given *by the Chief Commissioner himself*. Q.

NEWS FROM DUBLIN.

THE report of the Collector-General of Rates (probably the best statistical authority extant) clearly testifies the rapid progress of the Irish metropolis within the boundary; and the southern suburbs are considerably extending. With exception of Arran Quay and Rotunda wards all Dublin is stated to be "improving." The Four Courts new (extension) buildings cause "a considerable addition to be made to the city," although the assessment is proportionately affected owing to the demolition of old business houses. Trinity ward is much improved, and "the attractions of new buildings, such as the Kildare-street club, and the Turkish baths in Lincoln-place, are very remarkable." More dwellings have been raised of late years in Church-road and the vicinity of Amiens-street than could have been anticipated from the nature of the site, it being not long since considered an *irreclaimable swamp*. Various English residents—traders—have erected dwelling houses and offices (for the majority of which Mr. Lyons was the architect) in this locality, and other works are projected. As an evidence of the increasing value of house property, which at the north side had fallen to a low ebb, the collector states that "a tenant in Mountjoy-square, who paid 600*l.* to be relieved from the responsibility of his lease, now feels it an advantage to be allowed to remain in possession from year to year at his old rent of 110*l.*" Further, "a house in Rutland-square (at end of Sackville-street), purchased in the Encumbered Estates Court for 400*l.*, has been sold for 1,100*l.*!" A furnished house in Merrion-square was lately let for six months for 350 guineas.

We may add that the streets are being newly paved, sewered, and spacious footways of granite flaggings substituted for the narrow and irregular ones hitherto in vogue. The unoccupied houses in 1859 were fewer by 101 than those of 1858. Old-fashioned and dilapidated structures are giving way to the modern architects and builders. Let us hope that the filthy lanes and alleys, so numerous *still*, may disappear, and that the sanitary requirements essential for common decency will have immediate attention.

The Spring Agricultural Show, at the Royal Dublin Society, was held last week, and bore favourable comparison with those of preceding years. Numerous English and Scotch manufacturers exhibited agricultural, mechanical, and engineering appliances, amongst whom we noticed Messrs. J. B. Brown & Co., Cannon-street; Clayton, Shuttleworth, & Co.; Barrett, Exall, & Andrews; Perry & Sons, Bilston; Haywood, jun., Derby; Morton, Liverpool; Morton, Leeds; Hornsby, Grantham; Fry, Bristol; Hernulewicz, London; Smith, Brothers, Glasgow, &c., &c. The prize bull, Dr. McHale, is said to have brought 1,100*l.*

Messrs. Powis, James, & Co., of Watling-street, E.C., patentees of endless band saw machines, have had an important action tried at Dublin before the chief baron and a special jury, for 34*l.*,—the price of a machine alleged to have been purchased by Johanna Boag, proprietress of saw-mills at Belfast. Plaintiff's case was substantially that the machine was *bonâ fide* sold to defendant, through her son as agent, conditional that it should remain on trial for one month, and, if not approved of, to be returned. The machine was retained for four months in a store-case unopened, and defendant refused to pay. Defendant traversed the sale, and alleged that the machine was merely sent for exhibition, to induce purchasers. Verdict for plaintiffs. Counsel for plaintiffs, Messrs. Armstrong, Q.C., Hemphill, Q.C., and Sidney; for defendant, Sergeant Fitzgibbon and Mr. Faulkner.

The water supply question is solved, and the canals are to be the source; terms having been arranged with the Grand and Royal companies.

The project of connecting the North-wall quay with the southern thoroughfare of Great Brunswick-street, by means of a bridge across the Liffey, at the Custom-house, is assuming a tangible shape. A new patent balance rolling bridge, with longitudinal motion and double carriage ways, has been constructed over the George's Dock, by Messrs. Turner & Gibson, of Hammersmith Iron Works. Mr. M. Kenny, patentee. Width of water way, 47 feet. There are twelve rollers, or four to each of three main girders; also three cast-iron carriages, and bearing centres, one under each main girder, resting on lubricators, presenting on the elevation a parabolic curved form. Girders, 4 feet deep, 6 inches wide, with 15-inch flanges, top and bottom. At one end of bridge there is a counterbalance of five tons weight, and the opening is effected by lowering deflecting cams at one end, by a tilting apparatus at opposite extremity, and a driving gear nearly central. Mr. Forsyth is civil engineer. Cost, including masonry, &c., 4,000*l.*

We learn that new jetties, for shipping purposes, are increasing in numbers; that a second new graving-dock at North-wall point is in contemplation; and that the quays will be prolonged considerably beyond the lighthouse, and the river deepened.

SCAFFOLDING IN BELGIUM.

THE following may prove useful, and tend to diminish the number of scaffold accidents. In this capital (Brussels), and generally throughout Belgium, all building is performed *overhand*, no matter what may be the nature of the material employed, whether cut stone, brick, or rubble. As the building progresses, the flooring joists are put in, and, by means of trestles placed on them, the work proceeds from story to story, all materials being carried up short ladders, and so on planks, to wherever they may be required. The results of this are threefold: first, it prevents any obstruction to the flagway, or street of a town; second, it reduces the expense of scaffolding materially; and, last not least, it almost entirely prevents the possibility of accidents, and the wholesale loss of life or limb which so frequently occurs: the work can also be quite as well executed, as the well-built houses in this city most fully testify, more particularly in the new part, where they are constructed with great regard to architectural appearance and ornament. Another particularly good and practical method pursued in this country is the universal plan of hanging scaffolds. In all houses and buildings, whether public or private, holes are left 5 or 6 inches square, or round, according to fancy: these are cased with cut-stone, or very frequently cut out of the solid, and placed at a distance of 8 or 10 feet from each other round the outside walls, between the ceiling of the top or attic story and the roof, a space which in this country is made very useful, being boarded, and serving for drying clothes, holding lumber, &c. These holes are either left open, which is most useful for ventilation, or are stopped by a plug of wood, on the head of which is usually placed some ornament according to taste. When it is required to point, clean, or paint the outside of the house, which, by the way, is most generally the custom here every summer, small beams which fit these holes are pushed through, and made to project some 6 feet, or more according to the width of scaffold required, leaving about as much inside the loft, or "grenier," as it is called, where the end is firmly secured to the floor or joist by a cramp of iron screwed down for the purpose. From these beams frames 5 or 6 feet wide, and 15 or 20 feet long, indeed, as long as may be required, are hung. These frames seem to be only ladder poles, sawed down the middle, and connected by means of cross-pieces of timber mortised through, and pinned outside to prevent them from spreading. These are placed at distances of 6 feet, and across them planks are laid, on which, sitting or standing, the workmen, beginning at the top, continue their work to the bottom, shifting the planks from cross-bar to cross-bar as they proceed. Access to these scaffolds is obtained from the windows of the house, as there are no ladders or other communication with the ground used, which is another great advantage derivable from these hanging contrivances, as it quite prevents the possibility of robbery. All materials which may be required as the work proceeds are either pulled up from the ground, or obtained through the windows. To avoid risk to the passer-by, it is commonly the custom to hang a cross bit of timber to within a few feet of the ground to give warning of what is going on above. By means of these hanging scaffolds, the expense of long scaffold-poles, ropes, put-logs, and ladders, are avoided, to say nothing of a very great saving of time in their construction, as they can be hung out in a few hours. When I was mentioning the various uses to which the "grenier" is subjected, I forgot one whose great importance will, I trust, excuse my adding to the length of this already too long protracted letter. Access to all the flues of the house is attainable from it; and in each flue an iron frame is firmly built, in which a door is hung, more frequently double ones, the inside one being hung so as to shut down tight across the flue, prevent all draft, and, with the help of a wet blanket at the bottom, extinguishing any fire in a few minutes. These doors also assist much in the sweeping of the flues, and quite prevent the necessity of going out on the roof, and the consequent frequent breaking of slates, as well as danger to the persons employed. I trust these few observations may be of use to our builders and contractors, and may prove the means of saving many lives. I would just remark that the holes for these hanging scaffolds can be made easily, and at little expense, in existing houses, and would greatly facilitate the cleaning and painting the fronts of our metropolitan houses, adding thereby much to the freshness and cheerful appearance of our towns. L. H. KING HARMAN.

PROPOSED TESTIMONIAL TO MR. C. C. NELSON.

AT the meeting which was held on the 3rd inst., at the Rooms of the Royal Institute of British Architects, Mr. Sydney Smirke, R.A., in the chair, letters were read from thirty-two members of the Institute, expressing their warm approval of the object proposed, and agreeing to assist in carrying it into effect. On the motion of Professor Donaldson, seconded by Mr. Godwin, it was then unanimously resolved, that a testimonial be presented to C. C. Nelson, esq., as a grateful expression of the high appreciation entertained generally of his very valuable services, the time and constant attention that he has bestowed upon the responsible duties of his office, and of the honourable and courteous manner in which he has, with his colleagues, conducted for ten years the affairs of the Institute. It was further resolved, that each subscription should not exceed one guinea. A committee was appointed to carry out the objects of the meeting, and since then about sixty guineas, we believe, have been subscribed.

PROVINCIAL NEWS.

Romford.—The various improvements in drainage, &c., so long required, are now, says the *Chelmsford Chronicle*, to be proceeded with by the Local Board of Health; and, to enable them to do so, they intend borrowing between 6,000*l.* and 7,000*l.*

Maldon.—The new public hall here has been opened. A public hall, mechanics' institution, and private dwelling-house are embraced in the undertaking. The edifice has been raised for the Maldon Public Hall Company by Messrs. Spurgeon & Sons, of Maldon, from the designs and under the superintendence of the company's architect, Mr. T. Roger Smith, of London. The new building occupies a site on the north side of the High-street, near the Town-hall: it is of brick, has a frontage of 43 feet 6 inches, and the total depth from the front wall to the back is 115 feet. Each side of the hall has five windows. The dimensions of the hall are 36 feet wide, 66 feet 9 inches long, and 32 feet 6 inches high. It will seat upwards of 400 persons, independent of the accommodation on the platform.

Clifton.—Another project has been broached for completing the suspension-bridge across the Avon, which will unite the two counties of Somerset and Gloucester. The matter, it is said, has been taken up with spirit. This structure was commenced, as many of our professional readers may remember, by the late Mr. Brunel more than twenty years ago, and upon it upwards of 40,000*l.* were expended up to 1843. The roadway of the proposed bridge is 850 feet in length, and 220 feet above high-water mark.

Liverpool.—The local papers give an account of new business premises named Compton House, which have been enlarged so as to extend over a site of about 3,222 square yards in Church-street, Leigh-street, and Basnett-street. The new buildings have been erected from a design by Messrs Haigh & Co., builders. Mr. Dempster was the stonemason: Messrs. Smith & Son were the bricklayers, Messrs. Lingard and Merrick the painters, and Messrs. Goodall & Son the plasterers and decorators. The style adopted is a free adaptation of the Italian, and comprises a frontage of 55 feet, which is carried up five stories, or 60 feet above the level of the street line, the whole being executed with stone from the Grinshill quarries in Shropshire.

Guernsey.—There is going to be a lighthouse erected on the Hanors, says a local correspondent. There are some dangerous rocks on our south-west coast. The stones are brought on the E. in the town. The Trinity Board has the management.

CHURCH-BUILDING NEWS.

Threekingham.—A restoration of the church here has been effected under the direction of Mr. E. Browning, of Stamford, architect. The free-stone of the nave, pillars, and arches has been cleaned, and the windows of the south aisle have been restored. The porch has been restored, with a new open-timbered roof. The ancient bench ends of the church have been reproduced in English oak. The floor of the church is of encaustic tiles. The recumbent figures of "Lambert de Trekingham" and his wife have been partially restored, and set on a plinth of plain stone. The outlay on these and other restorations up to the present time, has not exceeded 500*l.* Much, however, remains to be done to the bell frames and the tower and spire.

Braintree and Bocking.—The chancel of the church has now been restored by the trustees of the Felsted Charities. The sum of 240*l.* was at first voted for the work, but the roof was found in so dilapidated a state that it had to be entirely removed, a great portion of the east wall pulled down, and the whole of the east Perpendicular window taken out. Under the superintendence of Mr. Chancellor, of Chelmsford, a new oaken roof has been put upon moulded trusses, supported on oak corbels, with purlins and braces,—the whole having been worked out of English oak. A five-light Geometrical tracery window has been put in. The walls have been scraped down and restored, in the course of which some curious old mural stencillings were discovered. The whole of the works in the chancel have been carried out by Messrs. Parmenter & Son, of Bocking, at a cost of about 400*l.*

Newport (*Essex*).—The church of Newport, the tower of which was entirely rebuilt about two years ago, has now been renovated. The south porch was restored at the sole expense of W. C. Smith, esq., at a cost of 220*l.* The new works also included the insertion of a south window and doorway and windows at the sides,—all of Caen stone. Mr. Smith was likewise at the expense of re-flooring the church with deal where the seats are usually placed, and the laying down a pavement of red and black in the aisles—repairing all the interior stonework of the pillars and arches at a cost of 139*l.* All the old deal pews have been cleared away, and forty-six new open oak benches placed in the transepts and aisles, at an expense of 106*l.*, also paid by Mr. Smith. The central area of the church is occupied by 150 chairs, free to all. In the chancel, the old pews have been removed and stalls of carved oak, with poppy heads, substituted,—six on each side. The Early English octagonal font of Barnack stone has been restored at the expense of Mr. Brown, of Lynn, the contractor for the works, and placed, according to the original plan, on six black marble columns. A decorated window has been inserted in the south aisle, the gift of Mr. Shirley, one of the churchwardens, and Mr. David Skipper, of Newport. A new roof has been put on the north aisle, at the expense of the Rev. J. Chapman, vicar of Newport, and Mrs. Chapman; and since the rebuilding of the tower the parishioners have entirely roofed the nave of the church with oak (a *fac-simile* of the old roof), and rebuilt the clerestory walls, inserting eight new stone windows of three lights each, with cusped heads,—the work, including the Westmoreland slates for the roof, costing 687*l.* 10s. A new stone pulpit, supported on marble shafts, from a design by Messrs. Jekyll, of Norwich, architects, has been given by W. C. Smith, esq., at a cost of 45*l.*

Chelmsford.—The small memorial chapel at the New Church Cemetery is now completed. The design was by Mr. Chancellor, of Chelmsford. The chapel, which stands at the head of the long walk leading to the main part of the cemetery, is in the Early Decorated style of the Geometrical period, and is built of Kentish rag with Bath stone dressings. A gabled bell-turret, surmounted by stone foliated cross, rises over the centre of the doorway at the southern end, and contains a bell, 21 inches in diameter, by Messrs. Warner & Son. The interior is only 30 feet by 17 feet, the height 26 feet. The contract of Mr. Hardy, the mason, was 650*l.*; and the total expenditure has been little less than 800*l.* Over the door is a stained-glass window, with three quatre-foils. At the northern end is a three-light Decorated window, with shafts, foliated caps, and bases, filled with stained glass, representing the Resurrection, executed by Clayton & Bell. The inscription is "In memory of Horatia Louisa Glyn." The chapel has been reared at the cost of the husband and the father of the deceased, assisted by her sisters.

Kettering.—A contract has been entered into with Messrs. Lewis and Hibbert, of Manchester, for a lightning conductor; and with Messrs. Taylor, of Loughborough, to re-cast the third bell.

Over (*Cambridgeshire*).—The foundation-stone of the new church at Over, which is to be erected almost entirely at the cost of Lord Delamere, as a memorial to the late Lady Delamere, was laid on Friday, the 23rd of March. The church will be of Geometrical Gothic design, and will consist of nave, chancel, north and south aisles, with chantry and vestry on the north side of the chancel, and a tower and spire, 140 feet high, at the south-west angle. Accommodation will be provided for 500, most part free. The total cost of the church, everything complete, is estimated at from 5,000*l.* to 6,000*l.*

Milton.—A new stained-glass window has been lately placed in the south side of the chancel in the parish church. The artists were Messrs. Hardman & Co., of Birmingham. The subject is the "Marriage in Cana of Galilee." The window was presented to the church as a marriage offering by a nephew of the rector's, and after the latter had been officiating at the wedding.

Sawbridgeworth (*Herts.*)—A new church, parsonage, and schools are about to be erected at High Wych, an outlying hamlet in this parish. A site has been presented, and the designs have been prepared by Mr. G. E. Pritchett, architect.

Wolverhampton.—The erection of Blakenall church is now about to be proceeded with, the necessary sum having been raised within about 200*l.* It will make the ninth church in the town of Wolverhampton.

Liverpool.—The foundation-stone of a Reformed Presbyterian Church (the first of the denomination in Liverpool) has been laid in Shaw-street, on a site of land opposite the Collegiate Institution. The site is 39 feet wide by about 120 feet deep, the whole of which area is covered by the church and vestries at the back; and, being close up to lofty houses on the south side, with the prospect of having similar houses, ere long, on the north side, the church, with the exception of large windows in the east and west gables, will be lighted entirely by a range of windows on each side of the roof. All of the edifice that will be exhibited to the street is simply the end elevation or gable, flanked by octagon piers, terminating in crocketed pinnacles, and pierced in the centre with a six-light window. The whole of the front will be executed in Minera stone, the quoins, mouldings, and other dressings to be polished, the walling to be in thin courses, pitched on the face. The interior of the church will be one apartment, 78 feet long by 35 feet wide, divided into seven bays, with arched principals of laminated timber, resting on stone corbels. Accommodation will be provided for 600, and the cost of the building is contracted for at 2,200*l.*, by Mr. Morriss, mason and joiner; Mr. Thomas Jones, slater and plasterer; and Mr. Thomas Holt, plumber, painter, and glazier. The Messrs. Hay are the architects of the structure.

Eccles.—On the 6th inst. the new Congregational chapel at Eccles, near Manchester (Messrs. Poulton and Woodman, architects), of which we gave views and a description on 17th December last, was opened for divine service. The side windows are to be filled with ornamental glass, of a delicate green tint, having a running pattern, in oak and ivy leaves alternately, and surrounded with stained crocheted borders. The principal window will be of stained glass, of geometrical design, with labels and shields at intervals, on which passages of Scripture are emblazoned. In each gable is also a small window, coloured. The windows have been designed and executed, under the direction of the architects, by Messrs. Edmundson and Son, of Manchester. Both the exterior and interior of the church are heightened in effect by the introduction of a considerable amount of carving.

Manchester.—The work of restoring and renovating the cathedral and old parish church of Manchester, says the local *Courier*, proceeds satisfactorily. The improvements have been effected chiefly in the body of the church, or the parish portion, as distinct from the choir or chancel, over which the churchwardens have no authority. The chief improvement, in regard to comfort and use, consists in re-seating the whole of the church with oak benches, in place of the ugly and inconvenient pews. The new seats are all open and free, having carved bench-ends. The next great improvement is the removal of the unsightly western gallery, which extended the whole width of the church. This clearance has opened to view the three western windows, and in due time, when the organ is removed, the great archway and entrance will be also opened. Temperature and ventilation have received the attention of the churchwardens, and great improvements have been effected. The lighting has also been amended by the erection of gas standards, with brass branches and foliage, the burners being in triplets of three on each of three branches. In addition to the removal of window-obstructing galleries, the lighting of the cathedral by day has been considerably aided by a thorough cleaning of the pillars and wall surfaces, which had become very dingy. The pillars of the nave have had their thick disfiguring coats of whitewash removed, and are coloured in distemper; while the pillars of the side aisles have had stripped off about 2 inches of plaster. The pillars appear to be many feet higher since the large disfiguring pews were removed. The dangerous lath-and-plaster ceilings received early attention, a warning having been given some time since by the fall of several cwt. of sham plaster ornament during divine service. About fifteen tons' weight of this unsafe ceiling have been removed from its position over the people's heads, where it was suspended only by old wood and rotten nails. The oak beams of the roof, moulded into form, look well, and are safe, the mouldings, bosses, and varnishing adding to the effect. The roof lights in the side chapels, or aisles, have been improved and filled with rough plate glass, ground on the inside, admitting abundance of light. The whole of the roofing has been newly leaded, and new planking placed underneath. All the carving throughout the church, whether in stone or wood, has been done by Mr. J. H. Banks, of Hulme. The pulpit, reading-desks, and choristers' seats, were made by Messrs. Hulme & Heron, of Cheetham-hill. The open seats were mostly placed by Mr. J. Marsden, of Bolton. Mr. Winder executed the plumbing; and Mr. Walker the heating apparatus. The coloured tiles, in geometrical patterns, with which the floors are laid, were made by Messrs. Maw & Co., and have been laid by Mr. T. W. Graham, who was also the contractor for the whole of the masonry. To his care the general superintendence of the whole work, under Mr. J. P. Holden, the architect, has been committed. Other alterations for the better might be mentioned, both inside and outside.

Bradford.—The committee appointed to make arrangements for the rebuilding of the chapel and schools for Little Horton-lane, says the *Bradford Observer*, some little time ago issued invitations for plans to architects in different parts of the country. Thirteen designs were submitted in response to this invitation, and the unanimous decision of the committee was in favour of those marked "*Experientia docet*," which proved to be the designs of Messrs. Lockwood and Mawson, of this town, architects. The second premium was awarded to Messrs. Poulton and Woodman, of Reading. The new chapel will be capable of accommodating upwards of 1,500 people, with school-room for 300 scholars, and class-rooms immediately adjoining.

Newcastle.—Newcastle, says the *Gateshead Observer*, is about to add to the number of her churches. The congregation at whose head is the Rev. J. H. Rutherford, now occupying on Sundays the lecture-room in Nelson-street, was, on Wednesday, the 4th of April, to proceed to the erection of a church (with schools), in the Bath-lane, where a suitable site has been obtained. The foundation-stone was to be laid by Sir Samuel Morton Peto, bart., M.P. The style selected is Gothic. Number of sittings, 1,200. There will be a tower and spire about 130 feet high, and a large west window of elaborate design. The architects are Messrs. Oliver & Lamb; and Messrs. Scott & Reed, the

builders, will, it is expected, have the church completed before the close of the year.

Channel Islands.—A chapel in the Channel Isles (Alderney), belonging to the Wesleyans, is suffering from that dangerous malady, "dry-rot;" and if accounts be true, it will have to be in part rebuilt. The Guernsey Methodist New Connection Chapel is in progress. We spoke of it some time back as being laid by the Rev. W. Cooke, of London, editor of the *Methodist New Connection Magazine.*

HARTLEY INSTITUTION COMPETITION.

The council, after a careful consideration of Professor Donaldson's report and examination of the plans, suggested to the town-council that the plan, No. 19, with the motto, "Comme ça," was the one most deserving of selection by the town-council, subject to such necessary modifications (if any) as might be requisite to bring the cost within the amount limited by the scheme.

At a meeting of the council of the borough held on the 11th inst., it was resolved that the report of the council of the Hartley Institution be received and adopted.

The sealed envelope having been opened, the authors of the design "Comme ça" were found to be Messrs. Green & De Ville, of Great Ormond-street, London.

HER MAJESTY'S THEATRE.

There is a peculiar talent required for theatrical management which shall endure, otherwise,—pay; and Mr. E. T. Smith has certainly shown the possession of a considerable share of it. He has a more arduous task before him at Her Majesty's Theatre than he has yet essayed, but he has begun very well, and we may augur for him success. London has become so rich and so large, and is brought by railway so near to all England, that we see no reason why both opera houses should not flourish.

Considerable improvements have been made in the approaches, staircase, and lobbies, of Her Majesty's Theatre; carpets, mirrors, and plants, lending their aid to impart an aspect of comfort and carefulness. Within, the stalls have taken the shape of chairs with great advantage, and the whole has been cleansed and brightened. Madame Borghi Mamo's first appearance, in *La Favorita*, was a complete success; and Signor Everardi, up to this time little heard of in England, made a decidedly good impression. Many would have been glad to find him in the *Trovatore*. Little has yet been done in the way of scenic effect, but preparations are making to produce *Oberon* with great splendour and completeness.

Books Received.

A Practical Treatise on the Turbine, or Horizontal Water-wheel; with seven plates. Specially Designed for the use of Operative Mechanics. By William Cullen, Millwright and Engineer. London: E. F. Spon, and John Weale.

It was told of the first Napoleon, that observing the perpetual annoyance and trouble his soldiers suffered in the hand-grinding of corn, and knowing that scarcely any district they might pass was totally devoid of streams of water, however small, he ordered one of his engineer officers, named Fourneyron, forthwith to invent some easy means of making use of such streams as they might meet with for the purpose of grinding the soldiers' corn. M. Fourneyron accordingly waited on his imperious chief next morning with the plans and other drawings of a small water-wheel, to be laid horizontally in the path of the stream, which was to be conducted through the axis or centre, and pass off by the circumference, turning the wheel, and attached machinery of simple construction, by its force thus made centrifugally operative. The invention was found to fulfil its purpose admirably; and this was the origin of the turbine.

The anecdote is well known, and we ourselves recorded it on a previous occasion.

Mr. Cullen, of Armagh, in the little treatise under notice, gives an intelligent account of the various forms which the turbine has assumed, together with modifications of it adopted by himself in his own practice. He went to France, and was allowed to examine various turbines either at work or in model; but the *naïveté* with which he complains of M. Fourneyron's unwillingness to be plundered by a rival manufacturer of his trade secrets is rather amusing. Mr. Cullen appears to think it rather laudable than otherwise to circumvent a Frenchman in such a case. M. Fourneyron (the inventor of the turbine) had told him "that 'it was the practical determination of the curves, *derived from experience alone* [italics, Mr. Cullen's], which led him to the solution of the question:' yet," adds Mr. Cullen, "he has taken good care to reserve to himself the plan for forming those curves." Mr. Cullen accordingly "found it impossible to effect any satisfactory arrangements with him." Being determined, however, he continues, "that my journey should not, if possible, prove abortive, I ascertained the address of his model-maker, Monsieur Clair, and visited his establishment, where I had an opportunity [Mr. Cullen having, apparently, kept "the object of his inquiries or the purport of his mission" to himself] of inspecting a model turbine on Monsieur Fontain's principle of construction, and was informed that this model was made to represent that of a large wheel now driving a saw-mill at St. Maur. I subsequently visited the foundry of Messieurs. Pihet & Co." he adds, "where Fourneyron had his wheels manufactured; but information was there scrupulously [and very properly, we think] withheld; and it was stated to us that the important portion of the constructive drawings could not be seen without the special leave of the inventor." Mr. Cullen, in short, found, as he tells us, that, notwithstanding "that easy and polite style so peculiar to a Frenchman," he "had to encounter that annoyance which is inseparable from the refusal of a favour," as the Frenchmen were "inclined to procrastinate, and require, particularly from a stranger [such as Mr. Cullen of Armagh], the favour of 'a second call,' that they might in the interim ascertain, if possible [cunning dogs that they were!], the object of his inquiries, or the purport of his mission."

An inquisitive spirit such as that of Mr. Cullen, however, was not to be foiled in its object and mission, and he returned to the charge by a second visit to France, and accordingly has reaped a pretty good harvest of practical details, which he has turned to good account in the present volume, reserving, doubtless, some little touches of *experience* to his own business advantage as a millwright and engineer, by taking a leaf out of the French book which he has so diligently perused.

Notwithstanding the uncommunicative politeness of M. Fourneyron, his model-maker, and his manufacturer, Mr. Cullen has managed to give an account of "the manner in which M. Fourneyron's curves may be constructed," and even presents drawings of these and of various other turbines which other French inventors, not so suspicious, explained, "with marked courtesy," to the author; and on the whole he has produced a very instructive and practical little work on that most useful invention the turbine, a piece of ingenious mechanism which ought to be better known and more in use than it as yet appears to be; for it possesses various advantages over the more usual perpendicular wheel, such as the simplification of mill machinery attached to it, and the comparative smallness of the wheel itself, the economization of water-power, and its use in cases where no other known wheel could be worked, at least to such advantage.

Miscellanea.

Town Improvements at Liverpool.—The Improvement committee have submitted to the town council a recommendation to carry out an extensive scheme of town improvements at an estimated cost of 300,000*l.* The plan comprises the widening of many old streets, and the construction of new ones, and embraces the improvement of the approaches to the landing stages. The committee recommended that application be made to Parliament for power to borrow 300,000*l.*, the interest upon which would, it was estimated, be met by a borough rate of 3d. in the pound. It was stated that, if the scheme was postponed for ten years, the cost would be ten times the amount. The consideration of the subject was adjourned until the report of the special committee, appointed to consider the plans for the proposed public offices,—which, exclusive of land, are to cost 100,000*l.*,—should have been submitted and approved by the council.

Masons' Strike in Cork.—Undeterred by the sad lessons taught by the late strike in London, the masons of Cork are preparing to "turn out" for an increase of wages. A local paper says:—"The masons of Cork—a trade that more nearly approaches the class of unskilled labourers than any other—receive at present 24s. a-week. Not satisfied with the amount, they have given notice of an intended strike for 3s. a-week additional."

The Engines of Ely Waterworks.—Mr. Latham having denied my statement on the duty of the engines in to-day's *Builder*, I will now give the authority from which I made the statement. For the duty of the old engine, I took the average of a whole year's working, from Lady-day, 1856, to Lady-day, 1857, from the accounts laid before the Board and the public, and passed by the auditor, and the average of that year is under 4*l.* 5s. per million gallons. For the duty of the new engine, I took the average from the accounts for coal, oil, &c., laid before the Board for the last *four months*, and I find that 7*l.* is under the average for that time. The last year's accounts will be laid before the public in the course of a few weeks, when the ratepayers can make the calculation for themselves.—Dan.

The Restoration of St. Alban's Abbey Church.—A public meeting of the subscribers to the Abbey Restoration Fund, convened by the Earl of Verulam, the lord lieutenant, has been held at the Shire Hall, St. Alban's, to consider the steps to be taken with reference to the appropriation of the funds some time since subscribed, and a portion of which were contributed conditionally on St. Alban's being created an episcopal see. The following resolutions were agreed to:—"That there being no immediate prospect of obtaining for St. Alban's Abbey the dignity of a cathedral, a circular be sent to the subscribers of 1856, inviting them to allow a part or the whole of their subscriptions to be applied to the repairs and restoration which are now reported to be essential to the sustentation of the building;" and "That the money which has been contributed, and shall not be withdrawn, be at once expended under the direction of Mr. Scott, in necessary repairs, always keeping in view the prospect of the Abbey becoming a cathedral."

Fall of a Platform at Worthing.—While about 200 children were seated on a platform erected at the Davison School, the whole gave way and fell to the ground. The erection, which covered an area of about 25 feet in length by 14 feet wide, was formed by placing at intervals six pieces of deal board about 16 feet long, 4½ inches wide, by 1½ inch thick in a sloping direction, the top end pitching against the wall 8 feet 6 inches from the floor, and extending at the bottom point about 14 feet from the wall into the room: on to these six pieces of board were fixed upright and transverse pieces or strips of deal to lay the seats and foot-boards upon: these seats, of which there appeared to be about eight or ten, were about 25 feet long. Most fortunately, the entire injury was confined to a few scratches and bruises. It would seem that the gallery was overloaded, or, in other words, the main timbers were of insufficient size. They had greatly deflected before finally breaking, and appeared to have splintered into layers, like coach-springs. The erection first gave way in the centre, where the mass converged, the two extreme strings remaining unmoved, although not a single seat remained not thrown down.

Gas.—Ninety-two towns in England have adopted the Sales of Gas Act.——At the last half-yearly meeting of the Lincoln Gas Company a dividend at the rate of 10 per cent., "with a bonus of 5 per cent. in addition," was declared.——The Dewsbury Gas Company have just paid a dividend of 10 per cent., and a surplus of between 500*l.* and 600*l.* was carried over at the annual meeting of shareholders.——At a meeting of the Oldham Beersellers' Association, it has been unanimously agreed that no candidate be supported at municipal elections who will not pledge himself to adopt every legal means to effect a reduction of the price of gas to 3s. 9d. per thousand feet to small consumers.

Tye and Andrew's Patent Sink Trap.—Messrs. Tye & Andrews have adopted the dip trap to sinks, with the advantage of carrying the waste water off with a good flush. According to their own description, "the traps are made of iron galvanized, and the mode of fixing is most simple, the joint having been made connecting the waste-pipe and trap, the lined and flanged grate is removed when the trap is passed through the hole of sink from the underside, when the lined grate is replaced, and by turning ditto slightly round, the clips of grate grip the flange of trap, and being lowered, the brass flange takes a bearing in rebate of sink, when it is either soldered or cemented round in the usual way." If it be intended, as we infer, that the grate should be soldered in, there would be the risk of the trap "silting up." The grate might be left loose with less risk than with the ordinary bell trap, and is in other respects far superior to it.

WORKMEN'S INSTITUTE AND BENEFIT CLUB.—On the 11th inst. Sir F. H. Goldsmid, Bart., M.P. for Reading, delivered a lecture on "The Health of Towns," to the members of the institution, established in the Euston-road, to provide, as we have before said, for workmen of all classes a reading-room, library, house-of-call, and benefit club, enabling them to make provision for sickness and old age. Mr. Jervoise Smith occupied the chair. The lecturer was listened to with much attention, and touched upon the various subjects of food, drink, dress, cleanliness, pure air, and wholesome recreation; and under each of these heads made suggestions for promoting the public health. The lecturer concluded by observing that, according to Dr. Guy, monarchs, noblemen, the gentry, and professional men, had a slight advantage as regarded length of life over workmen in towns, but they were decidedly less long-lived than agricultural labourers. As a general rule, however, death entered the palace first, the castle or mansion next, and, last of all, the humble cottage, if it were only blown upon by pure air; because health was improved, not by wealth and luxury, but rather by moderate toil of body and mind.

PHOTOGRAPHIC ETCHING AND MULTIPLICATION OF DESIGNS, PLANS, &C.—An ingenious and simple mode of preparing and printing copies of plans, &c., has been invented by Mr. William Strudwick, of Bolton-terrace, Newington, according to a printed description now before us in the form of a tract, titled "The Art of Photographic Etching." Essentially the process consists of etching or drawing on the opacified surface of a glass plate, and printing from that upon sensitive or photographic paper, whereby the light of the sun of course blackens the lines traced through the opaque coating, the copies being developed and fixed in the usual way. By this means, as the inventor remarks, architects and surveyors may copy their plans *ad infinitum*, by simply making an original drawing on the plate. We may here suggest, too, that the same process might do very well for the multiplication of circular and autograph letters, or other literary matter.

THE WESTMINSTER CLOCK TOWER A MONSTER GUITAR.—Very odd suggestions are occasionally made by our correspondents. "A Nobody" suggests that, as the construction of a bell fitting for such a clock as that at Westminster Palace appears to be an insurmountable difficulty (which is a mistake, to begin with), "an excellent substitute for a bell might be constructed in the clock-tower by stretching from its summit to its base metallic cables (such as those patented by the company in the Strand), upon the principle of the strings of the pianoforte [much more *forte* than *piano*, we suspect], and having them struck by a broad-faced hammer. The present striking power of the clock being sufficient to attain the desired effect, there would in such a case be no superincumbent top weight, no oscillation, and very little expense in construction." The latter part of this quotation seems to imply the idea that the tower is not strong enough for "the superincumbent top weight" and the oscillation, which no one avers; but is the writer aware that the force operative even on an ordinary pianoforte, by the tightening of its strings, is equivalent in itself to many tons weight? Our correspondent's suggestion, however, reminds us of a remark of our own in reference to Big Ben the second,—that its tone very much resembled the boom of American or Slick clocks provided with a volute of brass rod instead of a bell,—and this suggests the question whether such rods, made on the great scale, might be not unsuitable for town clocks in place of bells. No strain whatever, nor even oscillation, would here tend to pull down a tower or break its beams.

COMPETITION DESIGNS FOR HOUSES OF PARLIAMENT, SYDNEY.—With reference to the advertisement on this subject that has appeared in our pages on several occasions, we may mention that the general conditions and contour plan may be seen at our office by any who have not succeeded in obtaining a copy for themselves.

MONUMENT IN STAINDROP CHURCH, DURHAM.—Within the last few days a monument in memory of her grace the late Duchess of Cleveland has been erected by Mr. Physick, sculptor, of London. It is of Carrara marble, and consists of a recumbent figure of the deceased reclining upon a Gothic altar-tomb, while behind, in basso-relievo, is an angel conducting the departing spirit to the realms of bliss. The whole is surmounted with a Gothic canopy.

FIXING CRAYON DRAWINGS.—Mr. G. B. Moore, who advertises the discovery of a method of fixing crayon drawings, so that they may be kept in a folio, has sent us a specimen, wherein certainly the object aimed at is achieved.

NOTHING NEW UNDER THE SUN.—In your Miscellanea, recently, a correspondent gives an interesting account of the early dawn of an Enfield rifle. Another well-known modern destructive agent was foreshadowed nearly a century ago, as may be seen in the Annual Register, A.D. 1768 (p. 103):—"They write from Paris, that a curious fowling-piece of a new invention, weighing only seven pounds, has been presented to the king at Choisy. The piece discharges itself twenty-four times in two minutes, only by laying hold of the barrel after the first shot, and then permitting it to make a semi-circle from left to right, and then right to left: by this operation it re-loads and is ready again." Surely, with a steel spring and an enlightened public, we might have had Colt's revolver long ago.—J. CUNDY.

HOW TO PLEASE A COUNTRY SQUIRE ENSCONCED IN A HIGH PEW.—In a church in Gloucester, which has been lately refitted, and where the squire objected to the reduction of his high pew, as he wished to see all the sittings of equal height externally, in order that he might be screened by his accustomed height of breastwork, he allowed the floor within his space to be lowered, and was satisfied with a descent of a step or two towards mother earth! Is this an emblem of his humility?

LIGHTNING RODS.—The conductor or lightning-rod was long since known and employed by the wild peasantry of Lombardy. According to the writer of "Recreative Science," the Abbé Berthollet, in his work on electricity, describes a practice used on one of the bastions of the Castle of Duino, on the shores of the Adriatic, which has existed from time immemorial, and which is literally neither more nor less than the process which enabled Franklin to bring lightning down from the clouds. An iron staff, it seems, was erected on the bastion of the castle during the summer, and it was part of the duty of the sentinel, whenever a storm threatened, to raise an iron-pointed halbert towards this staff. If, on the approach of the halbert, sparks were emitted, the sentinel was made sure that a storm impended, and he tolled a bell, which sent forth the tidings to the surrounding country.

CHINESE NAVVIES.—An astute contractor has for some time past, says a contemporary, employed Chinese navvies upon the railway works in New South Wales, and professes himself perfectly satisfied with the experiment. Did he import them direct himself from China?

MENDING CRACKED BELLS.—In your No. 891 you have given an account of a process for mending a cracked bell, as exhibited by Mr. Varly at the Institution of Civil Engineers. Allow me to call attention to the method described in the "Pyrotechnic," by Biringuccio, first published 1540. The sixteenth chapter is upon the subject of soldering cracked bells, wherein he gives instructions to bury the bell, or cover and fill it with earth so much as to leave the broken part exposed, and to be acted upon by the fire of a furnace, and, when at a certain heat, to pour in a sufficiency of the same melted metal, which he says will make a sound job! There are several editions of Biringuccio in the British Museum.

H. T. ELLACOMBE.

TENDERS

For erecting a house in Bishopsgate-street, for Messrs. Soanes, Son, & Page. Mr. Wilkinson, architect. Quantities supplied by Mr. Meakin:—

Cubitt & Co.	£8,900 0 0
Mansfield & Son	8,350 0 0
Myers	7,862 0 0
Lucas, Brothers	7,750 0 0
Willson (accepted)	7,597 0 0
Piper & Son*	7,554 0 0

* Unwilling to comply with the conditions of contract.

For residence for Mr. A. Bowman, at Edenbridge. Mr. Horace Jones, architect. Quantities by Mr. Reddall:—

		Add, if in stone externally.
Wheeler	£4,260	£240
Carruthers	3,997	140
Thompson	3,987	182
Kesterton	3,950	not sent.
Lawrence & Sons	3,780	190
Scott	3,497	230
Pritchard & Co.	3,472	200
Conder	3,477	150
Edwards	3,295	183

For a warehouse in the Belle Sauvage-yard. Messrs. Tress & Chambers, architects:—

Deards	£2,960 0 0
Nixon	2,877 0 0
Wood & Son	2,740 0 0
Macey	2,676 0 0
Lawrence & Son	2,640 0 0
Axford & Co.	2,628 0 0
Conder	2,626 0 0
Brass & Son	2,594 0 0
Brown & Robinson	2,550 0 0
Coleman & Son	2,539 0 0

For five houses in Carter-street, Houndsditch. Messrs Tress & Chambers, architects:—

East	£2,700 0 0
Fowler	2,644 0 0
Conder	2,643 0 0
Tarrant	2,598 0 0
Elston	2,513 0 0
Deards	2,450 0 0
Coleman & Son	2,385 0 0

For Cornwall-buildings, Little Sutton-street, Clerkenwell, for Mr. Joseph Ferris:—

Evans	£2,500 0 0
Carter	2,499 0 0
Heath	2,289 0 0
Nash	2,198 0 0
Ring & Stanger	1,840 0 0

For the restoration of St. Mary's Church, Ashford, Kent. Mr. Joseph Clarke, F.S.A., diocesan architect.—

Edwards	£2,370 0 0
Smith	2,195 0 0

For Pinfold Parsonage, Rochdale. Mr. Joseph Clarke, architect:—

		Extra in Stone.
Farrell	£2,260	£170
Nield	2,140	250
Eaton	2,140	95
Stone	2,035	140
Hughes	1,925	

For alterations to the premises of the Pharmaceutical Society, Bloomsbury-square. Messrs. Lansdown, architects:—

Mansfield	£2,112 0 0
Axford & Co.	2,050 0 0
Patman & Fotheringham	1,962 0 0
Piper & Son	1,930 0 0
Myers	1,900 0 0
Hocken	1,892 0 0
Holland & Hannen	1,840 0 0
Macey	1,746 0 0
Batterbury	1,719 0 0

For new schools at Orford, near Warrington, Lancashire. Mr. Joseph Clarke, architect:—

Gibson	£1,955 0 0
Pierpoint	1,935 0 0
Hughes	1,790 0 0
Pennington	1,719 0 0
Stone	1,696 0 0

For new house at Boston-road, Brentford, for Mr. W. P. Griffith:—

Brimsdon	£1,935 7 0
Nicholson	1,885 0 0
Donncanson & Moultrie	1,830 0 0
McCallow	1,790 0 0
Adamson & Sons	1,777 0 0
Nye	1,699 0 0
Chamberlin (accepted)	1,697 0 0

For building new aisle and spire to St. Thomas's Church, Golborne, Lancashire. Mr. Joseph Clarke, architect:—

Eaton	£1,873 0 0
Farrell	1,862 0 0
Hughes	1,550 0 0
Fairclough	1,490 0 0
Pennington	1,390 0 0
Stone	1,252 7 3

For new buildings at Writtle Mills, Chelmsford, Essex, for Messrs. Beach. Mr. G. Elkington, architect:—

Wood & Munn	£1,793 0 0
Wells	1,630 0 0
Brown	1,560 0 0
Saltmarsh & Beaumont (accepted)	1,320 0 0

For a pair of semi-detached villas at Croydon. Mr. John Berney, architect. Quantities supplied:—

Ward	£1,756 0 0
Ebbutt	1,739 0 0
King, Burton, & Co.	1,648 0 0
Kent	1,646 0 0
McLennan & Bird	1,582 0 0
Riley	1,572 0 0
Hollidge	1,555 0 0
Clements	1,389 0 0

For alterations and additions to Dunster House, Rochdale. Mr. Joseph Clarke, architect:—

Taylor	£1,360 0 0
Fogget	1,254 0 0
Hughes	1,075 0 0
Farrell	924 0 0

For two houses at Enfield, for Mr. Draper, exclusive of carpenter and joiner's work. Mr. Reddall, architect. Quantities not supplied:—

Pritchard & Son	£1,130 0 0
Kebbel	1,098 0 0
Clarke	1,097 0 0
Ring & Stanger	1,095 0 0
Patman	998 11 0

For fitting up a warehouse in Cannon-street West, for Messrs. Murdocks, Slater, & Nephews. Mr. F. G. Widdows, architect. Quantities supplied:—

Browne & Robinson	£898 0 0
Ashby & Sons	895 0 0
Wm. Laurence & Sons	882 0 0
Brass	872 0 0
Ashby & Horner*	832 0 0
Wheen	819 0 0
Sargeant	815 0 0

* Accepted, as they undertook to do the work in a month.

For the restoration of the church of St. Margaret, Topcroft, Norfolk. Messrs. Benest & Newson, architects, Norwich:—

Ling & Balls	£539 0 0
Mumford & Jackson	535 0 0
Botwright	529 10 0
J. Brooks	468 0 0
Spinks & Burrell	465 0 0
Godbolt & Sons (accepted)	390 0 0

And the old lead and materials.

WALTER MACFARLANE & Cº

IRON FOUNDERS AND SANITARY ENGINEERS, SARACEN FOUNDRY, GLASGOW,

PATENTEES and MANUFACTURERS of PUBLIC SANITARY APPLIANCES,

For DWELLINGS, SCHOOLS, ASYLUMS, BARRACKS, RAILWAYS, STREETS, &c.

No. 2, Water-closet Range.

URINALS, Single, Double, and in Ranges.
WATER-CLOSETS, Single and in Ranges.
WASH-HAND BASINS, Single and in Ranges.
WASH-FOOT BASINS, Single and in Ranges.

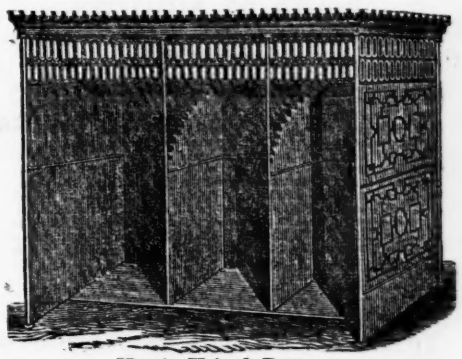
Composed wholly of CAST IRON; now in use in every large Town in the Kingdom, as well as the Colonies, and on the Continent.

LONDON HOUSE,

Mr. THOS. BEGGS, 37, Southampton-street, Strand, General Depôt for Sanitary Articles, and Plumbers' Brass Work.

Agents for the Counties of Northumberland and Durham.

HENRY WALKER AND CO. NEVILLE IRON WAREHOUSE, NEWCASTLE-ON-TYNE.



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JOHN DOULTON, BROTHERS, AND CO.

LIVERPOOL POTTERY,

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STORES—70, SOHO-STREET, LIVERPOOL.

MANUFACTURERS OF

DOULTON'S STONEWARE PIPES,
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PORTABLE STEAM-ENGINES **FOR HIRE** OR SALE.

R. RICHARDS & CO. Upper Ground Street, Blackfriars Road.

DOULTON'S TERRA-COTTA CHIMNEY-TOPS

WITHSTAND THE ACTION OF FROST AND SEA BREEZES, AND ARE ABSOLUTELY IMPERISHABLE.

MESSRS. D. AND CO. can refer Architects and Builders to Chimney Tops, Statues, &c., manufactured by them 25 and 30 years ago, which are now as sharp and perfect as when first erected.

A large and various Stock will now be kept on hand, of a uniform stone colour. Prices from 2s. and upwards.

DOULTON'S PATENT INVERT BLOCKS for Brick Sewers.
DOULTON'S PATENT JUNCTION BLOCKS for Brick Sewers.
DOULTON'S GLAZED STONEWARE SOCKET, HALF SOCKET, AND OPERCULAR OR LIDDED PIPES.

HENRY DOULTON AND CO., HIGH-STREET, LAMBETH, LONDON.

Manufactories—High-street, Lambeth; Rowley Regis, Staffordshire; and Smethwick, near Birmingham.

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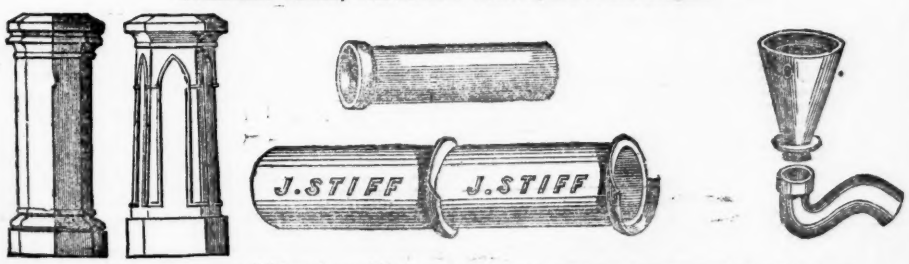
MANUFACTURER OF GLAZED STONEWARE DRAIN PIPES, WATER-CLOSET PANS, SINK-TRAPS, INVERT BLOCKS, AND ALL OTHER ARTICLES SUITABLE FOR DRAINAGE PURPOSES; ALSO

IMPERISHABLE TERRA-COTTA CHIMNEY-TOPS, FLUE-PIPES, COPINGS, GARDEN EDGINGS, &c.

LONDON POTTERY, HIGH-STREET, LAMBETH, LONDON.

STRAIGHT TUBES, with SOCKET JOINTS, in Two-feet Lengths.



HALF-SOCKET PIPES same prices as the Whole Sockets, by the use of which Drains may be readily examined, and Junctions INSERTED, IN THE EVENT OF REQUIRING FURTHER CONNECTIONS.

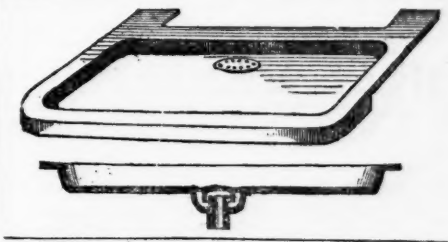
May be had also at the following Wharfs, viz.:—

Messrs. GLADDISH'S, Pedlar's-acre, Lambeth; Deckhead Wharf, Bermondsey; Pratt Wharf, Camden-town.
Messrs. BLACKMORE & CO'S. City-road Wharf, City Basin.
Messrs. COLES, SHADBOLT, and CO.'S, St. James's and Thornhill Wharfs, Caledonian-road, Pentonville.
Mr. A. RITCHIE'S, Ravensbourne Wharf, Greenwich. Mr. GEORGE ALLEN'S, Danver's Wharf, Chelsea.
Mr. LAVERS'S, Dowgate Wharf, Canal-road, Hoxton.
Mr. HENRY TURNER'S, 2, South Wharf, Praed-street, Paddington.

DRAWINGS, WITH PRICES, WILL BE FORWARDED FREE, ON APPLICATION.

PATENT CAST-IRON KITCHEN SINKS,

with TRAPS complete; manufactured by the Patentees, NEWTON, CHAMBERS, & CO. Thorncliffe Iron Works, near Sheffield.



SIZES. Long.	Wide.	Deep.	* Plain.	Galvanized.	Enamelled.
24 by	18 by	4	5s. 6d.	10s.	15s. each.
30 ,,	18 ,,	4	7s. 6d.	12s.	19s. ,,
36 ,,	18 ,,	4	8s. 6d.	14s.	22s. ,,
42 ,,	20 ,,	4½	10s. 6d.	18s.	27s. ,,
48 ,,	20 ,,	4½	12s. 0d.	21s.	31s. ,,

* These Sinks are covered with a Preparation which will prevent the possibility of them getting rusty.
To be had in London only of
Mr. J. JONES, Iron Merchant, 6, Bankside, London.

ENCOURAGE COUNTRY MANUFACTURE.

CLIFF'S SALT-GLAZED DRAIN-PIPES

are the strongest in the London Market.

CLIFF'S STONEWARE SOCKETED PIPES are the best GLAZED in the Trade.

A HANDSOME DISCOUNT IS GIVEN,

and a good article supplied. The largest Pipes in the Kingdom are made by JOSEPH CLIFF, at the Manufactory, Wortley Fire-brick Works, near Leeds. Net price per foot, socketed:—

36-inch.	3 ft. by 2 feet (oval).	30-inch.	2 ft. 6 in. by 1 ft. 9 in.
11s.	9s. 3d.	8s. 6d.	5s. 6d.
24-inch.	2 ft. by 1 ft. 6 inches	18-inch.	15-inch.
5s.	4s. 3d.	3s.	2s. per foot.

The thickness of each Pipe is commensurate with its diameter.
Connection can be made with the sewer at any time.
And the Pipes guaranteed to stand better than any Brickwork.

CLOSET PANS with S or P Traps at——3s. 6d.——each.

The BEST ENAMELLED WARE in London (no common goods sold). A deeply rich enamelled WHITE CLOSET BASIN, much superior to the common Lambeth stoneware, having a uniform white glaze throughout, of GREAT STRENGTH and DURABILITY, and neither DISCOLOURED to begin with, nor liable to become so afterwards. This Pan is made with the Flushing apparatus fitted complete in the same kind of ware, thereby saving the expense of a metal face, and equal in efficiency to the most expensive of patented appliances.—Address to

The WHARF No. 4, inside GREAT NORTHERN GOODS STATION, KING'S CROSS.

M. B. NEWTON, Agent.

DOULTON & WATTS,

LAMBETH POTTERY, LONDON.

3s. 9d.

3s. 9d.

In expectation of a greatly increased sale, D. & W. have determined to introduce the annexed pattern of their ENAMELLED STONEWARE CLOSET-PANS, at the price of the commonest description of earthenware.

The objections to the Cheap Closet-pans have been, that they are not only thin and liable to breakage, but that, after a short period, the glaze crazes, and the Pans become DISCOLOURED and UNFIT for USE.

The above CLOSET-PAN is free from all these objections; it is made of their Strong Vitrified Stoneware, with white interior glaze, and is now to be obtained at the price of the common yellow and white earthenware.

Experience has shown that this shape is the most simple and efficient, and that in strength, durability, and cleanliness, it cannot be surpassed by the most expensive closets.

Be particular to order the 3s. 9d. ENAMELLED STONEWARE CLOSET and TRAP.

PAPER-HANGINGS.—The CHEAPEST

HOUSE in London for every description of PAPER-HANGINGS is CROSS'S WHOLESALE WAREHOUSE, No. 70, GREAT PORTLAND-STREET, Oxford-street, where you can select from the LARGEST and MOST EXTENSIVE ASSORTMENT in the Kingdom, THIRTY PER CENT. CHEAPER than any other House in the Trade. Builders, Decorators, Dealers and large Consumers, will do well to visit this establishment.

SALES BY AUCTION.

BEAUTIFUL WORKS of ART, in Terra Cotta, the property of Mr. J. M. Blashfield.

MESSRS. RUSHWORTH & JARVIS are directed by Mr. J. M. Blashfield (who is removing to a more central position), to SELL by AUCTION, at the GALLERIES, Praed-street, Paddington, on WEDNESDAY, the 25th APRIL, and following day, the expensive STOCK of beautiful WORKS in Terra Cotta, entirely manufactured at his new establishment at Stamford, including a vast variety of objects of the highest excellence, amongst which will be found an original statue of Erin, by John Bell; Diana robing, life-size (from the original in the Louvre); well-executed statues of the Apollo Belvidere, Psyche, Ceres, Flora, a Neapolitan Girl with tambourine, and others; an elegant jardinière with bas-relief of boys and festoons; a variety of statues and statuettes, busts, grand and beautiful vases, tazze, fountains, terminals for gate-piers, &c. &c.—May be viewed on Monday and Tuesday preceding the Sale; and catalogues had at the Galleries, and at the Offices of Messrs. RUSHWORTH & JARVIS, Savile-row, Regent-street, W.; and 19, Change-alley, Cornhill, E.C.

Building Materials of two covered Rope-grounds and Bobbin-house, Limehouse.

MESSRS. FULLER & HORSEY are instructed by William Cotton, esq. who is clearing the ground for building purposes, to SELL by AUCTION, on TUESDAY, MAY 1, at TWELVE o'clock, on the PREMISES, Messrs. Huddart & Co.'s Ropery, Limehouse, in lots, BUILDING MATERIALS of the best description, including 170 strongly-framed roof principals, 170 squares pantiling, 300 squares slating, 30,000 feet rafters, 300 strong timber uprights, 60 oak ditto, 300 stone and brick bases, 150 squares 1-inch flooring, 8,000 feet strong flooring joists, 150 squares boarded fencing, 6,000 feet run fir plates and ties, 100 cast-iron brackets, 20 rods sound brickwork, 25 live lime and poplar trees, and other items.—To be viewed on Saturday and Monday previous to the sale, when catalogues may be had on the Premises; and of Messrs. FULLER & HORSEY, Billiter-street, E.C.

SALE of BRICKS and TILES at FINGRINGHOE, near COLCHESTER, ESSEX.—TO BE SOLD by AUCTION, by

MR. J. G. FENN, on THURSDAY, the 3rd of MAY, 1860, by direction of Mr. Joseph Barton, the proprietor, a large quantity of Red and Grey Stock Bricks of every description; also Pan Tiles, Gutter Tiles, Land Drain Tiles, &c. &c.—The grey stock bricks are lying within 20 yards of the quay, where they can be shipped on board lighters or barges at 1s. 6d. per thousand

TO BE LET, the PREMISES and the BRICK-EARTH where the grey stocks lie, with the use of the quay, most advantageously situated for shipping bricks to London or elsewhere.

TO BE SOLD by PRIVATE CONTRACT, 100,000 good, sound, well-burnt RED BRICKS, at Therington, near Colchester, Essex. The same can be carted to barges at 2s. 6d. per thousand.

For further particulars apply to Mr. JOSEPH BARTON, Alresford, near Colchester, Essex.

BARTHOLOMEW-CLOSE, SMITHFIELD.—TO CARPENTERS, BUILDERS, AND OTHERS.

MR. PEAKE having disposed of the Business, intends selling the REMAINING PORTION of the well-seasoned STOCK, on MONDAY, APRIL 23rd, 1860, upon the PREMISES, at TWELVE for ONE o'clock, in lots: comprising a quantity of prime and exceedingly dry White and Yellow Planks, Deals, and Battens, sawn and unsawn; prepared flooring, doors, sashes and frames, useful ironmongery, lead piping, scaffold poles, boards, and ladders; two builder's trucks, steps, trestles, drain-pipes, pans, &c. and numerous other effects.—May be viewed the morning of Sale, and catalogues obtained upon the Premises; and at Mr. PEAKE'S Offices, 44, Tooley-street, Southwark, S.E.

PLUMSTEAD, near WOOLWICH, KENT.—Valuable Freehold Building Land (land-tax redeemed), known as the Plumstead Park (abutting upon Cage-lane), near the Plumstead Railway Station, and the eastern entrance to the Royal Arsenal

MESSRS. DEAN & HUDSON will SELL by AUCTION, at the Auction-rooms of Mr. Hudson, William-street, Woolwich, on WEDNESDAY, MAY 16, 1860, at FOUR for FIVE o'clock, PLOTS of BUILDING LAND, being the first portion of the above estate. The land is pleasantly situate upon an elevated position, slightly removed from the high road, and commanding from the upper parts beautiful views of the Thames and surrounding country. The soil is dry, well adapted for building purposes, and from its close proximity to the railway station and Royal Arsenal, offers especial advantages. The lower ground, for small class houses, and the more elevated parts, are most eligible for detached or semi-detached residences. Purchasers may, if they think proper, pay half the amount of their purchase-money on signing the conveyance, and execute a security for payment of the balance by five equal yearly instalments, with 5l. per cent. interest.—Particulars, with plans, may be had of Messrs. HORSLEY & SONS, Solicitors, 8, Bank Chambers; of Mr. E. HUGHES, Solicitor, High-street, Woolwich; at the Office of Mr. HUDSON, Woolwich; and of the Auctioneers, 43, Fenchurch-street, City, E.C.

Valuable Building Land, Chelsea.

MESSRS. CUTTEN & DAVIS are directed to include in their Periodical Sale, at GARRAWAY'S, on MONDAY, APRIL 30, some very valuable BUILDING LAND, situate in the Park-road, Chelsea, lying between the Fulham and the King's-road, and overlooking Chelsea Park, suitable for the erection of twenty-four semi-detached residences; held for a term of ninety years, at a ground-rent of 54l. The proprietor has expended upwards of 600l. in making the roads, sewers, &c.—Particulars, with plans and conditions of sale, to be had of Messrs. MASON & STURT, Solicitors, 7, Gresham-street; and of the Auctioneers, 16, Ludgate-hill, E.C.

TO THE PATRONS AND LOVERS OF FINE ART.

MESSRS. BURNS & LAMBERT beg to announce that they will EXHIBIT, in their SHOW-ROOMS, 17, Portman-street, from MONDAY, the 23rd, till SATURDAY, the 28th inst., some very fine SPECIMENS of CHURCH-WORK; consisting of Vestments, Mitres, and Sacred Vessels, executed for the Right Rev. the Bishop of Mauricastro.

TO TIMBER MERCHANTS, BUILDERS, COACH, CABINET, PIANOFORTE MAKERS, AND OTHERS.

MESSRS. T. ROBERTS & CO. have received instructions from Messrs. R. Ward & Son (in consequence of the premises being sold for the new Music-hall) to SELL by AUCTION, on the PREMISES, No. 8, Oxford-street, on TUESDAY, APRIL 24th, at ELEVEN for TWELVE o'clock precisely, the whole of their remaining STOCK, UTENSILS in TRADE, &c.; consisting of Spanish, Cuba, and Honduras mahogany, in log, plank, and boards; Spanish dining-table boards, Honduras and cedar panel-board, veneers, wide pine plank, and deals, spruce, white and yellow deals and battens, a large quantity of prepared flooring, American birch, &c.—May be viewed two days prior and morning of Sale; catalogues in due time at 101, Bermondsey New-road; on the premises, 8, Oxford-street; and of the Auctioneers, 9, Billiter-street, E.C.

LOMBARD-STREET.—Building Materials.

MESSRS. GLASIER & SON are instructed to SELL by AUCTION, on the PREMISES, on WEDNESDAY, APRIL 25, at TWELVE for ONE, the valuable BUILDING MATERIALS of the HOUSE, No. 23, Lombard-street, in the city of London; comprising capital sound stock brickwork, slates, plain tiles, timber in roof, floors, &c.; flooring, wainscoting, shop-fronts, sashes and frames, doors, lead in gutters, pipes, cisterns, &c.; iron columns, capital wainscot office fittings, mahogany desks, gas fittings, fixtures, &c.—May be viewed the day prior and morning of sale, and catalogues had of W. W. POCOCK, Esq. Architect, 35, Craven-street, Strand, W.C.; on the Premises; and of the Auctioneers, 41, Charing-cross, S.W.

ANNINGSLEY-PARK, CHERTSEY, SURREY.—To Timber Merchants, Railway Contractors, and Others.

MESSRS. BUCKLAND & SON are instructed to SELL by AUCTION, on the PREMISES, on TUESDAY, APRIL 24th, 1860, at ELEVEN for TWELVE o'clock, 800 STICKS of fine FIR TIMBER, large and good; also 120 prime OAK TREES, with lop, top, and bark. The estate is situated within two miles of Chertsey and Woking stations, on the South-Western Railway, and surrounded by good roads.—Catalogues may be had of Messrs. BUCKLAND & SON, Surveyors and Estate Agents, Windsor.

CAPITAL BUILDING MATERIALS.—OLD BROAD-STREET.

PULLEN & SON are instructed, by the Directors of the National Bank, to SELL by AUCTION, on the PREMISES, on TUESDAY, APRIL 24, at TWELVE, in Lots, to clear the ground for rebuilding, the whole of the excellent BUILDING MATERIALS and FITTINGS-UP of the spacious Residence and Offices No. 13, Old Broad-street, with the house and premises adjoining, being No. 14, Old Broad-street; comprising capital stock brickwork, oak and fir timber in stout rafters, joists and girders, plain tiling and slating, glazed sashes, modern doors, handsome statuary and other chimney-pieces, wainscoting, partitions, and interior fittings-up; excellent flooring boards, handsome principal staircase, with wrought iron balusters; mahogany and plate-glass enclosures and lobby doors and remaining office fittings; stone paving, cills, and coping; iron railing, several tons of lead in flats, gutters, cisterns and pipes, stoves, ranges, presses, gas-fittings, and numerous useful fixtures and fittings-up.—May be viewed the day previous. Catalogues of E. N. CLIFTON, Esq. Architect, 17, St. Helen's-place; and of PULLEN & SON, 80, Fore-street, Cripplegate.

BUILDING MATERIALS, Lothbury, facing Bartholomew-lane.

PULLEN & SON are instructed by the Directors of the Caledonian Insurance Company to SELL by AUCTION on the PREMISES, on FRIDAY, April 27th, at TWELVE, in Lots, to clear the site for their new Offices, the valuable BUILDING MATERIALS and FITTINGS UP of the HOUSE and PREMISES, No. 39, Lothbury, facing Bartholomew-lane: comprising sound brickwork, tiling and slating, useful timber in roofs and floors, glazed sashes, doors, panelled and glazed partitions, chimney-pieces, flooring-boards, plate-glass fronts, lead gutters, cistern-, and pipes, stoves, and other fixtures and fittings up. May be viewed the day previous.—Catalogues had of J. P. ST. AUBYN, Esq. Architect, 35, John-street, Bedford row; and of PULLEN & SON, 80, Fore-street, Cripplegate.

Building Materials of Twelve Houses, Upper Chapman-street, St. George's, East.

PULLEN & SON are instructed by the Directors of the London and Blackwall Railway Company to SELL by AUCTION, on the PREMISES, on MONDAY, APRIL 30th, at TWELVE, in Lots, all the valuable BUILDING MATERIALS, FIXTURES, and FITTINGS UP of TWELVE HOUSES in Upper Chapman-street, St. George's, East: comprising capital sound brickwork, oak and fir timber, in rafters, joist-, and quartering; tiling, modern sashes, doors, partitions, cupboard fronts, chimneypieces, sound floor-boards, stone coping, sills, York paving, lead gutters and pipes, stoves, coppers, and other useful materials and fixtures.—May be viewed the day previous. Catalogues had of PULLEN & SON, 80, Fore-street, Cripplegate.

CHARLTON, KENT.—Capital Building Materials of Smith's Wharf, with the spacious Factories and Workshops; the whole erected within the last seven years.

PULLEN & SON are instructed to SELL by AUCTION, on the PREMISES, near the Steam-boat Pier, Charlton, on THURSDAY, MAY 3, at TWELVE, in lots, all the CAPITAL BUILDING MATERIALS of the spacious Factories, Workshops, Saw Mills, Engine and Boiler Houses, Stores, and extensive Premises known as SMITH'S WHARF, erected with choice picked materials within the last seven years. The buildings contain about 500,000 prime stock bricks (equal to new), 300 squares of excellent slating, stout rafters, framed principals and tie beams, girders, and capital joists in long lengths, 12 and 9 by 2½ and 3; 150 squares of boarded floors, modern sashes, casements, panelled and glazed doors and partitions; coach-house and other gates, linings and interior fittings up, lead and arris gutters, 500 feet run of new brick enclosure walls, and a great variety of useful materials of a superior description. May be viewed the day previous, catalogues had of PULLEN and SON, 80, Fore-street, Cripplegate.

CHEAM, SURREY, nearly contiguous to the village and the Cheam Station, on the London and Epsom Railway, and within fifteen miles of the Metropolis.

MESSRS. BLAKE will SELL by AUCTION, at GARRAWAY'S COFFEE-HOUSE, Change-alley, Cornhill, on FRIDAY, MAY 4, at TWELVE o'clock, in twenty-five lots, 200 acres of capital FREEHOLD MEADOW and ARABLE LAND (with possession), lying in detached parcels, and principally in elevated and picturesque situations, together with an extensive Homestead, adjoining the church. There are many fine sites upon the property, which are admirably adapted for residences or public institutions (the southern portion of the estate extending to Banstead Downs), and the whole presents to capitalists unrivalled advantages for safe and remunerative investments. The lands are bounded by the estates of Sir Edmund Antrobus, bart.; E. R. Northey, esq.; and Mrs. Palmer. Particulars with plans may be had at the Inns at Cheam, Ewell, Epsom, Sutton, and Banstead; at Garraway's; of WM. HALE, Esq. Solicitor, 6, Searle-street, Lincoln's-inn-fields; of Messrs. DRUMMOND, ROBINSON, & TILL, Solicitors, Croydon; and of Messrs. BLAKE, Croydon.

FOREST-HILL.—Several charming Sites for a superior Class of Residence, occupying a delightful position on the summit of the Hill, a few minutes' walk from the Station.

MR. DEBENHAM will SELL, at the Mart, on TUESDAY, MAY 22, at TWELVE, in suitable lots, the remaining portion of the valuable FREEHOLD BUILDING LAND, situate on the brow of the eminence, on the western and preferable side of Forest-hill Station, adjoining a gentleman's grounds, and commanding an almost unlimited view, offering by far the choicest sites now available in this deservedly-favourite and conveniently-accessible locality, where the demand for residences of a good class is daily on the increase, and building operations may be carried on with the certainty of immediate return and a liberal profit. The roads and drains have been already constructed with much care and at great expense. Particulars and plans of Messrs. PARKER & SONS, Solicitors, Lewisham: and of Mr. DEBENHAM, 80, Cheapside.

HARROW, MIDDLESEX.—Beautiful FREEHOLD BUILDING SITES, varying from one to seven acres in extent

MR. DEBENHAM will SELL, at the MART, on TUESDAY, MAY 22, at TWELVE, in several lots (unless an acceptable offer for the whole be previously made by private contract), about 29 acres of valuable FREEHOLD PASTURE LAND, tithe free and land tax redeemed, occupying a particularly eligible position at the junction of the Harrow View and Pinner Drive Roads, to each of which it presents a considerable frontage: within five minutes' walk of the station, and half an hour by rail from London. In addition to its peculiar natural advantages as a building site, resident freeholders will enjoy the important privilege for their children of free education at the celebrated Harrow School, and the occupant of each house of the annual value of 50l. will be entitled to a first-class free pass to and from London for eleven years. Particulars and plans of F. CARRITT, Esq. Solicitor, 24, Basinghall-street; and of Mr. DEBENHAM, 80, Cheapside.

HACKNEY.—TO BUILDERS AND OTHERS.

MR. DEBENHAM will SELL, at the MART, on TUESDAY, MAY 1, at TWELVE, in two or more lots, as may be arranged at the time of sale, about one-third of an acre of valuable FREEHOLD BUILDING LAND, possessing frontages of 200 feet to the Templar-road and College Avenue. The estate on which this Land is situate is in a most eligible position for building purposes, within a short distance of the Railway Station and omnibus route, and close to Clapton Square. About twenty houses have already been built, and are all tenanted at remunerative rents. There is a good sewer along the road.—Particulars and plans (now ready) of T. G. Bullen, Esq. Solicitor, 19, Cannon-street West, and at the Estate Offices, 80, Cheapside.

CITY OF LONDON.—Valuable Freehold Properties, offering a safe and improving Investment, or an eligible Site for Warehouses, Mercantile or Manufacturing Premises.

MR. DEBENHAM will SELL, at the MART, on TUESDAY, MAY 1, at TWELVE, in two lots: Lot 1, the valuable FREEHOLD PREMISES, No. 20, Little Moorfields, situate within a few paces of Finsbury Pavement, and less than five minutes' walk from the Bank of England—comprising Two Dwelling Houses, with large Shop or Warehouse, yard in the rear, formerly in the occupation of Messrs. Hill & Stone, coach builders, and estimated to be worth a rental of 80l. per annum. Lot 2, Extensive Stabling, Coachhouses, and Blacksmith's Shop, with Carpenter's Shop and Workshop, possessing a frontage of 65 feet to Angel Alley, in the occupation of Mr. Chew, at the low rental of 80l. per annum.—Particulars and plans (now ready) of James Crowdy, Esq. Solicitor, 17, Sergeants' Inn, Fleet-street; and of Mr. Debenham, 80, Cheapside, E.C.

BY ORDER OF THE EXECUTORS.—Important to Scientific Institutions, Mathematical, Philosophical, and Optical Instrument Makers and others in pursuit of science.—Four days' sale of the valuable and extensive stock of Astronomical Telescopes, Transit and Surveying Instruments, Regulators, Pneumatic, Electric, and Optical Instruments of every description.

MR. W. F. HAMMOND has received instructions TO SELL by AUCTION, on the 30th day of APRIL next, and three following days, on the PREMISES, No. 30, Holborn, nearly opposite Furnival's Inn, the entire valuable STOCK of the late W. & S. Jones, who for so many years have maintained a distinguished European reputation for the superiority of their scientific instruments. The stock consists of two magnificent 8 feet 6 inch and 7 feet 6 inch astronomical telescopes, equatorially mounted with 6-inch aperture, several large reflectors with beautifully marked speculums, and a large variety of others of a smaller size, a valuable orrery (silver mounted), a 2 feet 9 inch astronomical transit, with 2¾ inch aperture, also a variety of others of a smaller class, several first-rate astronomical regulators, with mercurial pendulums by Barraud, Molyneux, and other eminent makers, beautifully-finished working models of locomotive and stationary steam-engines, water-wheels, cranes, &c.; several large and extensive plate and cylinder electrical machines, with experimental apparatus of every kind, double barrelled air-pumps, with receivers, transferring plates, hemispheres, &c.; a variety of azimuth and altitude instruments of all sizes, beautifully divided on silver sets of mechanical powers, silver universal sun-dial, and a large assortment in brass, for every known latitude, surveying instruments, consisting of theodolites, levels, pocket sextants, mining dials, and circumferenters, azimuth compasses, optical squares, also some very valuable cases of drawing instruments, gold and silver spectacles, &c. On View two days previous and mornings of sale. Catalogues 6d each.

The commanding and extensive Business Premises will be submitted at the sale upon the conditions of a Lease for twenty-one years.—Auction and Estate Agency Offices, 3, Cary-street, Lincoln's Inn, W.C.

CLEARANCE SALE.—TO BUILDERS, CONTRACTORS, AND OTHERS.

MESSRS. LEREW & LEREW will SELL by AUCTION, on the PREMISES, Rochester-place, Camden-town, near the Camden Railway Station, on MONDAY, APRIL 30th, at TWELVE for ONE, the SURPLUS STOCK; comprising about 300 feet cube of stone, 300 feet landing, paving, and curb, 1,000 feet of dry wainscot and mahogany, 10,000 feet boards and pine from 4 to 2½-inch, 300 deals, 10 new doors, sashes and frames, blocks and falls, 500 scaffold-poles, 150 scaffold-boards, 100 putlogs, 2 windlasses with standards and handles, yokes and pails, jack, 7 long ladders, 2 crabs, 24 carpenter's benches, tightening bench and screw, 3 sets of floor-dogs, crowbars; a quantity of cast and wrought iron, nails, glue, &c. 2 stone-trucks, spring-cart, phaeton, gig, bay horse, &c. &c.—To be viewed the day prior to the sale; and catalogues may be had on the Premises, and of the Auctioneers, 2, Cardington-street, Hampstead-road, and 36, Chancery-lane.

The desirable PREMISES to be LET or SOLD.

TO TIMBER MERCHANTS, BUILDERS, CABINET PIANOFORTE MAKERS, AND OTHERS.

THOMAS ROBERTS & CO. have received instructions to SELL by PUBLIC AUCTION, on TUESDAY and WEDNESDAY, 8th and 9th MAY next, at ELEVEN o'clock precisely each day, on the PREMISES, in the rear of No. 2 to 12, Gough-street, Mount-pleasant, Gray's-inn-lane, 20,000 feet Spanish and Honduras MAHOGANY, 50,000 boards prepared flooring, 5,000 Pine, Yellow, White, and Spruce planks, deals, and battens; 10,000 feet die square and other scantling; Birch, Beech, Ash, Walnut, Veneers, Staves, &c. &c.—Catalogues at the place of Sale, and of the Auctioneers, 9, Billiter-street, E.C.

TO IRONMONGERS.—TO BE DISPOSED OF, an old-established BLACK and FURNISHING IRONMONGERY BUSINESS, in one of the best suburbs of London. Returns, about 3,000l. per annum; stock and fixtures, about 2,000l. The premises are in a commanding situation, very commodious, and arranged expressly for the trade. The business was established in 1785; and the connection, which is of the most respectable class, has been fully maintained to the present time. In the hands of one or two active men, the trade may be much extended.—Apply to Messrs. FULLER & HORSEY, Billiter-street, City, E.C.

TO BUILDERS.—TO BE DISPOSED OF, on very advantageous terms, a well-established BUILDING BUSINESS, in the South of Hampshire, which has been successfully carried on by present and former proprietor for nearly twenty years. Annual returns about 5,000l. The Premises, including large and substantially-built workshops, offices, two cottages, covered saw-pits, sheds, stables, cart-house, &c. will be let on lease at a moderate rent. A very good dwelling-house, with garden and meadow attached, and near the place of business, may be rented with the option of purchasing. The well-selected stock-in-trade, and the plant, to be taken at a valuation in the usual way; but the present stock and plant may be reduced, if desired, to suit the purchaser. Possession may be had at once, or on 24th June next. Satisfactory reasons can be given by present proprietor for his relinquishing the business.—For particulars apply to C. J. GUNNER, Esq. Solicitor, Bishop's Waltham.

TO BE DISPOSED of, in a very desirable and rapidly improving neighbourhood in a considerable market and garrison town in one of the Eastern Counties, an old-established GENERAL IRONMONGERY BUSINESS; with premises well calculated for carrying on all, or any, of the branches connected with the trade. Stock very saleable and of moderate extent; and a satisfactory reason will be given why the business is to be put off.—For particulars apply by letter, addressed to J. C. care of J. G. Smith, Ratcliffe-terrace, Goswell-road, London, E.C.

TO STONEMASONS.—An old-established BUSINESS in the above trade TO BE DISPOSED OF, at Romford, Essex, in consequence of the decease of the late proprietor, situate only six miles east of the City of London Cemetery, offering an excellent opportunity for a person of perseverance; to be had on very advantageous terms.—Apply to Mr. H. STURDY, 3, Surinam-terrace, Stratford, Essex.

BUILDERS, CARPENTERS, and OTHERS requiring TEMPORARY CASH ACCOMMODATION, without expense of mortgage or life assurance, are solicited to peruse the system of business adopted by the Finsbury Bank, 144, St. John-street-road, E.C. Established in 1838.—All communications and business transactions strictly confidential. Prospectuses forwarded.

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